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THE ART OF ADVERTISING.

THE art of advertising, if such a term can be applied to a system having no clear rules or definite plan, is one of the curious developments of this century. In studying its growth, the student cannot fail to be impressed with the great contrast afforded by the methods at present in use to attract the attention of a critical public, with those of a period dating back—say fifty years ago. It is a noteworthy, but an easily understood circumstance, that the most persistent and therefore the most successful advertisers have been makers or venders of remedies for the alleged cure of bodily infirmities and disease. But that the methods in use over half a century ago for vaunting the miraculous properties of this salve and that pill, should have undergone no material change in the years which have elapsed is not so easy of explanation. In every other branch of trade, profession or business, the system of advertising has undergone a marked change; and among the patrons of the newspaper, the bill board and other mediums of attracting public attention, new candidates for fame have arisen, and thrust themselves into successful prominence by various devices not lacking ingenuity nor without interest. The dealer in nostrums, with here and there a notable exception, has, however, lagged behind in the race, but, such is the credulity of the public, with no apparent loss of revenue. He still plies his trade with every evidence of a brisk demand for his peculiar compounds, and a due appreciation upon the part of a disease-afflicted public, of his humanitarian (*sic*) efforts toward the preservation of the race. That the public is becoming skeptical of the claims made in these days by the patent medicine manufacturers is, however, becoming evident; and this we think is largely due to the lack of ingenuity displayed by the makers. The testimonials adduced by contemporary nostrum dealers are, for example, singularly deficient in point; the cures cited are commonplace, and there is a hackneyed ring to each recital. Take any of the testimonials of cures effected by Blank's Cure for Consumption and compare it with a a testimonial published sixty years ago by the proprietors of Congreve's Balsamic Elixir:

"My cough, *which had broken fifteen blood vessels*, was completely subdued. I may now say I am a miracle in the eyes of all those who were in the habit of seeing me."

This is a testimonial which has more than the record of a simple cure to recommend it and is something more effective than the ordinary tale of miraculous recovery. Whether it would be equally well adapted for use as a puff for Blank's Cure, in these days, is not so certain; but testimonials every whit as wonderful as the foregoing have appeared to spread the fame of compounds of very recent introduction.

The modern advertiser has several advantages over his type of a few decades back, and prominent among these is the advertising expert. But notwithstanding this the business we have in mind—the patent medicine industry—has not flourished proportionately with other industries. The explanation is easy. Under the influence of so-called experts in advertising, the patent medicine men have been led to set typography above the merits of skill in composition, and to place pictorial illustrations before variety of narrative. An example of the style of appeal formerly in vogue, as given by a writer of the period, will fully bear out our statement. The remedy advertised is "Baker's Patent Antidote for the Prevention of Seasickness," and its efficacy is thus borne testimony to by an obliging ship's steward:

"This is to certify that Baker's Patent Antidote was taken by a lady going to Rotterdam in the "Ocean," who found great relief from a single dose, having a heavy sea on at the time, and likewise, several gentlemen. I think myself that the Antidote is a very excellent medicine to take.—F. WILLIS, Steward."

"Mr. Willis," as our chronicler wisely observes, "is apparently not much used to writing, but the statement is highly satisfactory; and it is a comfort to know that great men may in future be saved from a malady which renders them not only wretched but ludicrous."

The space which Mr. Baker takes up with a description of the effects of seasickness would never be allowed by modern advertisers; it would be deemed a useless waste of paper and ink. Yet we have no reason for doubting that MR. BAKER was successful. Here is a sample of his narrative:

Who has not suffered from Sea-Sickness?—that remorseless fiend, who, sparing neither age nor sex, intelligence nor respectability, makes a point of setting at defiance all the decorums of etiquette, all the grace of attitude, all the claims of humanity. I have seen dignified statesmen, lovely women, poets of the most romantic, divines of the most spiritual cast of countenance, all huddled together at a ship's side with confusion truly humiliating, yellow as daffodils, and moaning as dismally as a north wind whistling through the keyhole of a back attic. Sea-Sickness! The very word is an emetic; and I heave while I write it.

The Chinese are credited with exceptional skill in the art of advertising, but we scarcely think them equal to the Japanese, a sample of whose peculiar style of appeal we present elsewhere in this issue.

ON A CERTAIN CONDESCENSION IN FOREIGNERS.

MR. ERNEST HART who registers himself at the Arlington Hotel, Washington, as "ERNEST HART, F.R.C.S., D.C.L., London, Editor *British Medical Journal*, Dean of St. Mary's Hospital," has seen fit to prepare and deliver to his American confrères at the Pan-American Medical Congress recently held at Washington, and at the reception of medical editors, most interesting homilies on the beauty of humility. Unfortunately for the salutary influence which these homilies might have had, his hearers when admonished to "be humble" could not but recall that disciple of humility immortalized by DICKENS in Uriah Heep, and with such an example before them there is, despite the admonitions of MR. HART, a disinclination to "be humble."

However, the physicians of the United States have found in DR. WM. A. HAMMOND, of Washington, a most able champion, as is shown in the appended excerpts from a letter on the subject published in the *New York Medical Journal*. MR. HART condemns the frequency with which the names and portraits of eminent medical men appear in the daily papers of the United States as contrasted with their exclusion from the English papers. DR. HAMMOND writes:

The medical profession in England is of no social or political importance. The average medical man is a little lower than the lawyer, a little higher than the tradesman; the people do not care for him.

With us, on the contrary, no class ranks socially above the medical profession; in England its members are looked down upon with something of contempt by the nobility and gentry.

When an American physician pays a professional visit to the highest in the land, he goes in at the front door and waits in the drawing-room till summoned to his patient. In England the question was discussed in a medical journal a few years ago of whether, when called to the house of a nobleman or that of a country gentleman, the medical practitioner should go in by the main entrance or by that used by the servants. As a matter of fact, he often enters by the back door and waits in the hall until invited to go upstairs to his patient. Think of it, Mr. Editor! Think of the members of a learned profession being treated as menials, and think of any one, from the President of the United States down, acting in such a way to his medical adviser! The social position of the average medical practitioner in England is one of extreme degradation, and no one knows it better than Mr. Hart. Here he calls upon the President of the United States and is treated with respect! At home the *entourage* of the Queen is closed to him.

*****

Relative to Mr. Hart's opinions, which he freely expressed, in regard to physicians having a pecuniary interest in the sale of any medical preparation, it is to be borne in mind that the "surgery" is the common appendage to the average English practitioner's residence, and that he there prepares and sells medicines, not only to his own patients, but to anybody who requires them and that we see such items in the bills that he renders to his patrons (for he regards them as "patrons") as an "enema" so much, a "draught" so much, an, "anodye" so much, and so on.

But it is not in medicine alone that this condescension is manifested. It is observable in almost every walk in life, whether in science, art, or literature, and it is none the less annoying for being so ill founded. To the honor of the pharmacists who represented Great Britain at our recent pharmaceutical meetings in Chicago be it said that they were either so well pleased with what they saw or so considerate of their hosts as to avoid the grave error which MR. HART has fallen into.

This air of condescension is, however, frequently manifested by foreign pharmacists resident both here and abroad. If these gentlemen will seriously consider the relative status of pharmacy and pharmacists as a whole they cannot but see, if at all fair minded, the many excellences.

In no country, save possibly Germany, has the pharmacist so enviable a social position as here, and there the social position of the few proprietors is gained at the cost of the many who are unable to secure a "concession."

In no country is real ability as a pharmacist so quickly recognized or so richly rewarded as in the United States.

In no country has there been prepared a pharmacopœia with which that of the United States would not compare favorably, and that too solely by means of voluntary unpaid work without any government or other subsidy whatever.

Finally, in pharmacy proper, more especially galenical pharmacy, American methods are equal if not superior to those of any other nation. As an instance of this may be cited the general favor with which American fluid extracts are being received the world over.

"APPROBATION FROM SIR HUBERT."

IT is, we think, with pardonable pride, that we reproduce below two notes, showing that the enterprise shown by the AMERICAN DRUGGIST AND PHARMACEUTICAL RECORD in presenting so prompt and complete an account of the proceedings of the American Pharmaceutical Association, as appeared in our issue of August 24, the week after that meeting adjourned has been appreciated.

To the Editor of the AMERICAN DRUGGIST:

SIR: I must congratulate you upon the journalistic ability displayed by you in publishing so prompt and so excellent a report of the proceedings of the A. P. A. Experience has taught me the numerous difficulties in the way of such an undertaking.

JOSEPH P. REMINGTON.

This from the presiding officer of the association "is praise indeed," while one who was unfortunately debarred the pleasure of attendance writes:

I was compelled at the last moment to forego the pleasure of being present at the Chicago meeting of the A. P. A., but your account of the proceedings is so excellent that, after reading it, I feel almost as though I had really been present. F. J. WULLING.

Such cordial and unsought commendations are most gratifying indications that our work is appreciated.

Reciprocal Registration.*

By Henry R. Slack, Md., Ph.M.,
Secretary Georgia State Board of Pharmacy.

Some time since I read an able article in The American Druggist and Pharmaceutical Record indorsing the action of the Colorado Board for seeking to have their law so amended as to prohibit recognition of licenses from other State boards.

It is regarded as an axiom of history that "revolutions never go backward," and in politics that "liberties once granted to the people are never surrendered without a struggle." Here, however, we have the spectacle of the exception that proves the rule, in a State board seeking by legislative enactment to be deprived of a liberty coveted by many of her sisters. A clause not mandatory, but optional, granting permission to recognize licentiates of other boards, and why?—because they wish to be progressive! It seems to one viewing the situation from a distance that Colorado's entire energy is being spent in one direction—progressive and aggressive bi-metallism or rather white metallism.

The author intimates that it is only the younger and weaker boards that are anxious for reciprocity, and this largely because it will add dignity to them to have their licenses recognized by older and more conservative boards. This sounds plausible, but facts will not sustain this theory. Last month I addressed a letter to the secretary of every State board in the United States and have received answers from thirty-four, leaving only two, Utah and California, to hear from. Nineteen favor reciprocity, ten oppose, four oppose on present plan, and Ohio is divided with a majority favorable. Fourteen have already accepted the plan suggested by the secretaries at their meeting in New Orleans. In point of age the boards favoring reciprocity have the advantage, Georgia leading with the oldest board, established in 1825, while Tennessee with a law only applying to fourteen cities, and a board not yet six months old, is arrayed in opposition.

I find the average age of the twelve boards that oppose interchange of certificates to be nine years and seven months, while that of the fourteen accepting it is nearly thirteen years. (Dates excepting Georgia's taken from Hallberg's "Pharmacal Calendar.")

As to lending dignity, how much would Rhode Island's recognition increase the importance of Missouri's board, or Maine's, Michigan's.

"Why reciprocity, "tickle me and I will tickle you?" facetiously asks the author of the article above referred to. This question is too absurd to require an answer, and shows that while he may have some knowledge of the "*Staats-Examen*" of Germany he has small conception of State sovereignty. No civilized nation expects or demands for its citizens greater privileges or immunities in a foreign country, than she is willing to grant the citizens of that State. It is only when dealing with inferior races or heathen nations that we ever have the effron ery to demand greater privileges for our citizens than we expect or promise to accord theirs;and this state of affairs has not yet been reached in these United States.

Quite a number oppose reciprocity because they think their law does not allow it. That ground is no longer tenable, as the Arkansas board has solved that question; then, too, very few of the laws specify how the examination shall be conducted, leaving it entirely in the hands of the board.

The Attorney-General and Supreme Court Judges of Georgia ruled that the examination of diplomas or certificates, held by the applicant, if satisfactory to the board, would satisfy that clause in the law, "Who shall have passed a satisfactory examination." This clause is in every law I have seen, and if it is a principle of law in Georgia it is a principle of law in Maine. It is on this clause that the able board of Michigan bases its right to interchange, and, as it has stood the test of a Supreme Court decision, I suppose it is correct. That being true, we can have Reciprocity of Registration if the boards desire it.

The advantages to be gained by a system of interchange of certificates, on the plan suggested by the secretaries' meeting at the A. P. A., in New Orleans, in my opinion far outweigh the disadvantages; though by no means perfect, is still a long stride in the right direction.

When could a more opportune time present itself for the discussion of this subject than this, our Columbian year, in the evening of the nineteenth century! When men from every section of the globe have met together as brothers to discuss plans for benefiting the human family, shall the honorable profession of pharmacy reverse the wheels of progress and erect Chinese walls of exclusion along the State lines of this *E pluribus unum?*

Now as "The law allows it," let us, casting aside prejudice, formulate a plan that can be accepted by even conservative Old New England, for she has far more to gain by it than we of the South and West.

Never in the history of the world has the poet's dream

"The Parliament of man, the Federation of the world"

been nearer realization than to-day in our numerous World's Congresses.

* Presented to the International Pharmaceutical Congress and referred to the Section on Education and Legislation of the A. P. A., Chicago, 1893.

Germ-free drinking water may be obtained, says K. Schipiloff, by adding from 5 to 6 centigrammes or less of potassium permanganate to each liter of water. Where the water is not heavily loaded with germs 1 to 2 centigrammes will suffice for each liter. The permanganate not only destroys all bacteria but even imparts an agreeable (?) taste to the water. To make sure of accomplishing the desired object the permanganate should be added until it imparts a permanent, slight rosy tinge to the water. This color is then discharged by the addition of a very small proportion of sugar or of brandy.

Salacetol is the name applied to the salicylic acid ester of acetol. It is designed as a substitute for sodium salicylate and also for salol. It is claimed that carbolic acid poisoning has followed the decomposition of salol in the system, but that in salacetol $C_6H_4<^{COO\,CH_2\,COCH_3}_{OH}$ the salicylic acid is combined with wholly harmless acetone alcohol or acetol, hence this cannot occur. Salacetol is made by heating monochlor-acetone with sodium salicylate. It crystallizes from alcohol in fine, light sparkling crystals. It is very difficultly soluble in cold water, and somewhat soluble in hot water. It dissolves readily in alcohol, ether, carbon bisulphide, chloroform, benzol, etc. It melts at 70° C. and has a slightly bitter taste. According to Bourgett salacetol is of value in rheumatism, the dose being from 2 to 3 grammes (30 to 45 grains) per day, while good results have followed its use in diarrhœa, etc., in doses of 2 to 3 grammes (30 to 45 grains) in 30 grammes (about 1 ounce) of castor oil.

Iodine Water for Influenza has been commended by G. Müller (D. ärtzl. Prakt.) The iodine water should be freshly prepared by giving five drops of a mixture of 2 parts of iodine and 4 alcohol to half a glass of water for one dose twice a day.

STARCHES IN ROOT DRUGS.*

By Edson S. Bastin, A.M., F.R.M.S.,

Professor of Botany and Pharmacognosy in the School of Pharmacy of the Northwestern University, Chicago, Ill.

It occurred to the writer that a study of the starches found in crude drugs might yield results which would be of service in identifying the drugs and in detecting adulterations. In the adulteration of powdered drugs, naturally farinaceous materials, such as the wastes of mills, are commonly employed, and the forms of the starches from these sources are for the most part well known, and figures of them have frequently been published in works on materia medica. If the forms and structures of the starches that occur in most crude vegetable drugs were equally well known, or if authentic studies of them were available for reference, they would be of great value to the pharmacist in the detection of fraudulent mixtures. Other than microscopic means of detecting such frauds are practically hopeless, since assaying every sample purchased is both tedious and expensive, while the microscope is readily and quickly available and its employment inexpensive.

Starch is by far the most abundant and universally distributed of non-proteid reserve food materials found in plants, and it always exists in the form of corpuscles or granules. These appear to be composed of two substances: granulose, which constitutes by far the larger part of the grain (90 to 95 per cent. of its weight) and a skeleton composed of farinose or starch cellulose. It is only the former of these that stains blue with iodine solution. When all of the granulose has been dissolved out by maceration in saliva kept at a temperature of 98° F. the skeleton of farinose that remains stains only a brownish color with iodine. It is to be remarked that Krabbe denies that starch grains are composed of these two different substances, but regards the so-called farinose skeleton as a product of subsequent chemical change. But the weight of scientific opinion is in favor of the former view.

In structure the starch grain is not of equal density throughout. Every starch grain has a hilum or nuclear portion around which the rest of the grain has been deposited in layers, and the hilum and layers next to it are less dense than those farther exterior. The hilum may be located centrally in the grain, which then usually has a rounded form, or it may be located to one side of the center, in which case the form is apt to be elongated. Moreover, different layers of the grain contain usually different proportions of water, for which reason there is often appearance of concentric or eccentric lines or curves about the nucleus. These are very conspicuous in some starches, for example in that of the potato, but difficultly visible on many starches, and in this case rendered distinct only by application of reagents that cause the grains to swell. On many others, perhaps the majority, concentric markings are not demonstrable at all.

Starch grains, in nearly all cases, if not in all, are formed by the agency of proteid bodies, either chloroplasts or amyloplasts. That formed in chloroplasts under the action of sunlight, is gradually dissolved and transferred as glucose or some other soluble carbohydrate to some other part of the plant, where it is either employed in the processes of growth or else is stored again, usually in the form of starch, for future use. It is this, the reserve starch, which forms the conspicuous grains that are the subjects of our present study. These are formed by amyloplasts, partly at least, at the expense of the amyloplast itself, and partly, according to the investigations of A. Meyer and M. E. Laurent, not only from glucose and cane sugar, but out of various other carbohydrates or bodies related to them, such, for example, as mannite. Strasburger holds, and apparently with good reason, that in rare instances starch is formed from the general protoplasm of the cell, and not solely from amyloplasts, and some have maintained that it is occasionally formed by mere crystallization in the cell, without the aid of any proteid whatsoever; but this certainly remains to be demonstrated.

Next to starch, perhaps the most common non-proteid reserve food material is fixed oil, and many seeds contain this to the exclusion of starch. There is the best of reason for believing, however, that fixed oil is made from starch; for in all the cases of oily seeds or fruits that have been investigated, it has been found that in the unripe state the seed or fruit contains abundance of starch with little or no oil, and that as ripening progresses the starch is replaced by oil.

There are some plants, however, notably many compositæ, in which another carbohydrate, inulin, takes the place of starch from the first as a reserve food material. For this reason we look in vain for starch in the cells of inula, taraxacum, lappa, etc. From the whole group of fungi, also, starch is absent, being replaced functionally by some other carbohydrate. This seems to be connected with the fact that none of the fungi contain chlorophyll, and hence they are unable, like green plants, to utilize carbon dioxide as food.

As to whether starch grains are to be regarded as crystalline or colloid bodies, there is a difference of opinion among high scientific authorities. Schimper and Arthur Meyer regard them as sphere crystals, but Strasburger controverts this view and holds that the layers of the starch grain are formed not by crystalline deposit but by the conversion of successive layers of proteid matter. The weight of scientific opinion is with Strasburger. There are the best of reasons for believing that the polarization effects produced by starch grains are not due to crystalline structure but to stress or strain, of the same nature as the polarization of glass when it is subject to strain. The polarizing effects are precisely such as would be produced in any transparent solid composed of layers, the inner ones of which were kept in a state of stress by the compression exerted by the outer ones. Moreover, when by use of a swelling reagent, such as caustic potash solution, the outer layers are made to expand by the imbibition of water, the polarization effects immediately disappear. Were the solid particles of a crystal thus forced apart by water each particle would still exhibit polarization phenomena.

The tissues which are most liable to contain starch, or which contain it in largest quantity, are those of the parenchymatous series, though it sometimes occurs in the latex of laticiferous tissues, and even in ducts and tracheids. In the stems of dicotyledons it occurs chiefly in the parenchyma of the middle and inner bark, in the medullary ray cells and in the cells of the pith. In the roots of these plants it has a similar distribution, being for the most part confined to the middle and inner bark, and the medullary rays, pith not being present in these organs. In succulent stems and roots, of course, it also commonly occurs in the xylem tissues of the fibro-vascular bundles.

The study of the following starches does not profess to be exhaustive. For example, it would be desirable that the study be not confined to a few samples of each drug, but that a large number of samples, representing as many different conditions of growth as possible, be studied, so as to ascertain the limits of variation in the starches from the same species of plant. While in preparing this paper quite a number of different

*From *The Apothecary*, Vol. II., No. 2.

samples have in most cases been studied, not nearly as large a number of specimens have been examined as should be desired in order to learn the limits of variation in the same species. Still, enough has been done, it would seem, to establish the general fact that the limits of variation are not wide, and that, in many cases at least, the starches are so characteristic as to make their study an important means of identifying a drug.

No starch could be found in any of the following root drugs: Taraxacum, inula, lappa, pyrethrum and senega. Most of the other root drugs examined were found to contain it in abundance, but in a few drugs, as the rhatanies, gelsemium and the licorices the quantity was relatively small. The starches were studied by aid of the iodine and dilute potassium hydrate tests and by means of the polariscope. All the drawings have been made on the same scale, with the camera lucida, a magnifying power of 875 dimeters having been used in each case.

The starch grains in Mexican sarsaparilla are, when single, usually spherical, with a central hilum, which, in the larger grains, is commonly more or less angularly

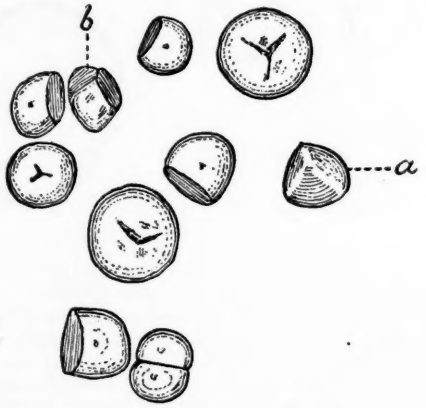

FIG. 1.—STARCH OF MEXICAN SARSAPARILLA.

fissured and with indistinct concentric markings, if any. Many of the grains are double, treble, or even sometimes quadruple, and, of course, when the members of the group are broken apart they expose one or more flat sides, as in *a* and *b*, Fig. 1.

The starch grains of Honduras sarsaparilla average very nearly the same size as those of the Mexican va-

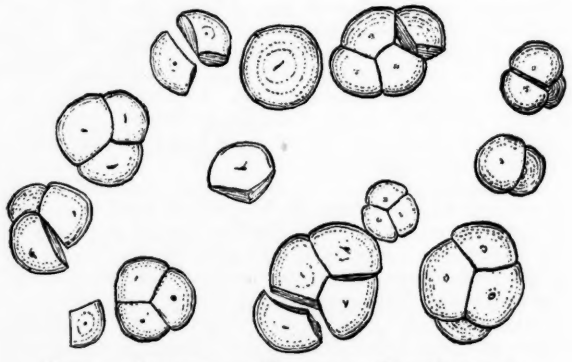

FIG. 2.—STARCH OF HONDURAS SARSAPARILLA.

riety but a much larger number of the grains are compound, and the hilum is not so often fissured.

The starch grains of the rhatanies are also spherical or spheroidal in form, but of larger size than those of the sarsaparillas. In Peruvian rhatany, Fig. 3, the hilum is central or sub-central, rather indistinct and seldom fissured. Only about one circle is discernible about the hilum, and that only in the larger grains.

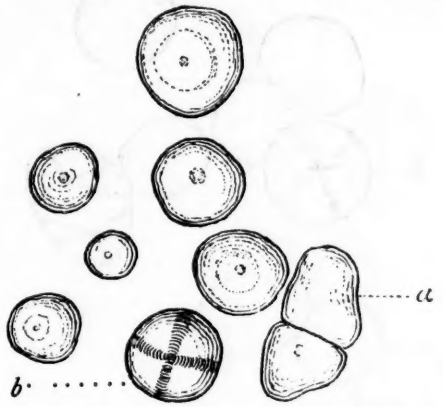

FIG. 3.—STARCH OF PERUVIAN RHATANY.

Occasionally double grains are seen, but these are not common. (See *a*, Fig. 3.) *b* shows a grain as it appears when viewed between crossed Nicols.

The grains of Savanilla average somewhat larger than those of Peruvian rhatany, they are more commonly compound, and the hilum is not infrequently

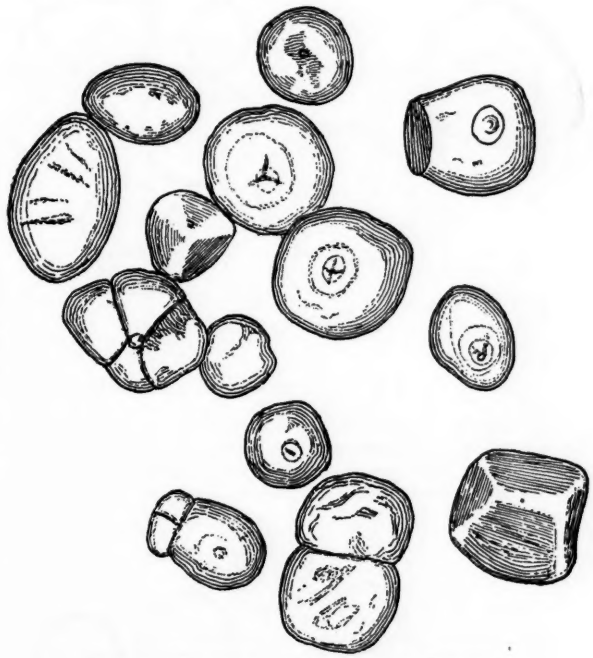

FIG. 4.—STARCH OF SAVANILLA RHATANY.

somewhat angularly fissured, as shown in Figs. 4 and 5. In this rhatany, grains which appear single when viewed by ordinary light, often reveal their double character when viewed by polarized light. In Fig. 5, *b* is an ordinary grain with a central hilum and showing under polarized light a nearly rectangular cross, while *a*, in the same figure, shows a grain which, under the polariscope, reveals a hilum toward either end.

Texan rhatany has starch grains which are similar in general structure to the preceding, but averaging larger and having more distinct concentric circles about

the hilum. The latter is sometimes fissured with a straight or more or less angular fissure. *a* shows a grain as seen by polarized light.

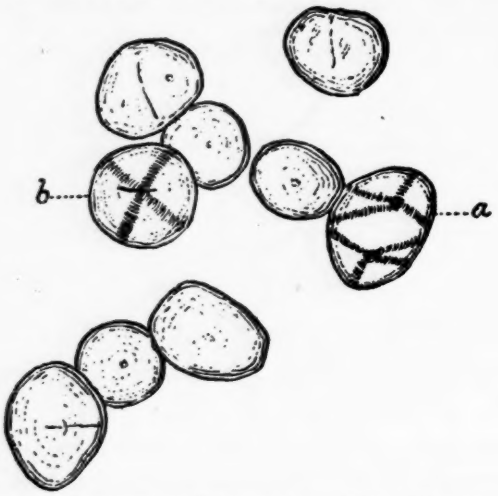

FIG. 5.—STARCH OF SAVANILLA OR NEW GRANADA RHATANY.

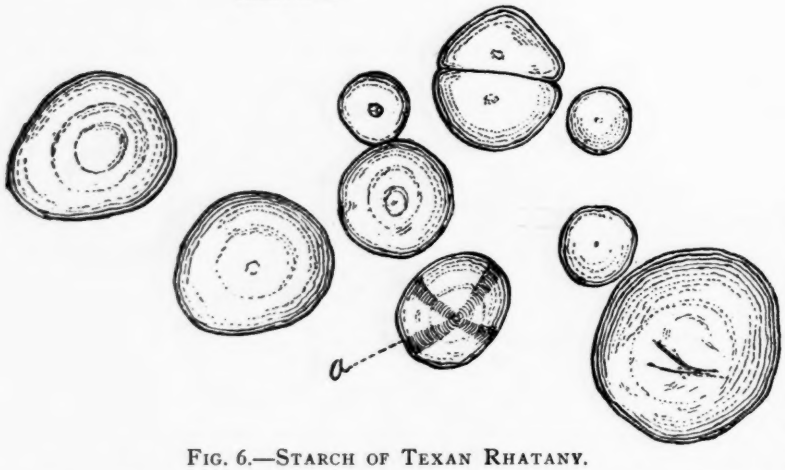

FIG. 6.—STARCH OF TEXAN RHATANY.

The starch of bryonia has spheroidal, or more commonly oblong, or more or less irregular grains, which often show fracture surfaces. The hilum is usually somewhat to one side of the center and often fissured with two to three rayed fissures. Concentric markings few and indistinct, and not usually recognizable without the aid of a swelling reagent. (See Fig. 7.) *a* represents a single grain as it ordinarily appears when viewed between the crossed Nicols.

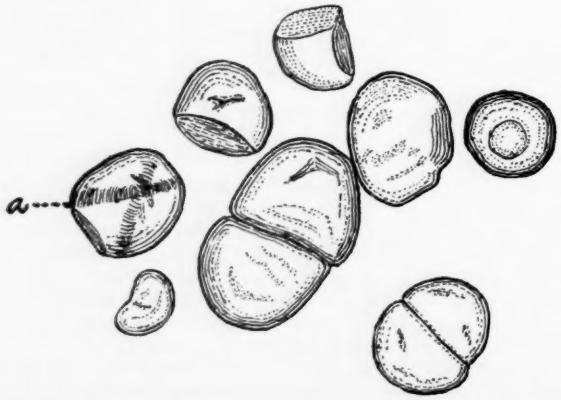

FIG. 7.—STARCH OF BRYONIA.

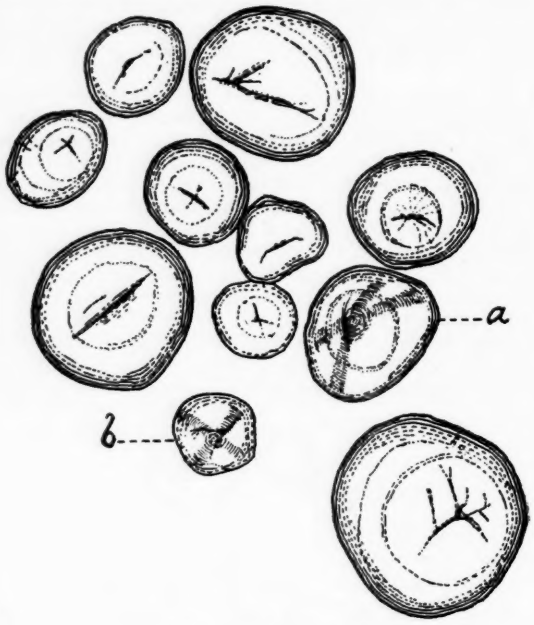

FIG 8.—STARCH OF STILLINGIA.

Fig. 8 represents starch from the root of stillingia, in the cortex of which it exists in great abundance. The grains are rather large, spheroidal, smooth with a sub-central or central, usually conspicuously angularly fissured hilum, which is surrounded with from one to three concentric markings. These, however, are not always visible until the grains begin to swell under the action of caustic potash solution. *a* and *b* show grains as they appear between the crossed Nicols.

In Fig. 9 are shown typical starch grains from the root of phytolacca. They are rather large sized, mostly oblong or ovate, smooth grains with the hilum eccentric, and having usually conspicuous and often numerous fissures radiating from it. Sometimes these fissures are unbranching, sometimes branching, sometimes straight, but often curved. Other markings indistinct or none. *a* and *b* are grains viewed by polarized light. Angular, double and even treble grains are sometimes seen.

The starch grains of pareira are of various shapes, sometimes nearly spherical, sometimes lenticular, and not infrequently conical or mullar-shaped, as in *a*, Fig. 10. They are often double, treble or quadruple, or single ones appear with one or more flat faces, showing that they have been aggregated. The hilum is central or sub central, the larger grains, by treatment with potassic hydrate solution, showing concentric markings. The grains vary as greatly in size as in shape. The hilum is sometimes fissured with a single straight fissure, or else with several radiating ones.

In Fig. 11 are shown starch grains from the root of althæa, throughout which they exist in great abundance. In shape they are elongated, reniform or ovoid,

with the hilum usually located near one end, and often with a light line or band extending lengthwise of the grain through its center, as shown in *a*. This band is sometimes branched, as in *b*. Circular markings are indistinct, or none at all. The unequal-armed cross of polarization is shown in *c*.

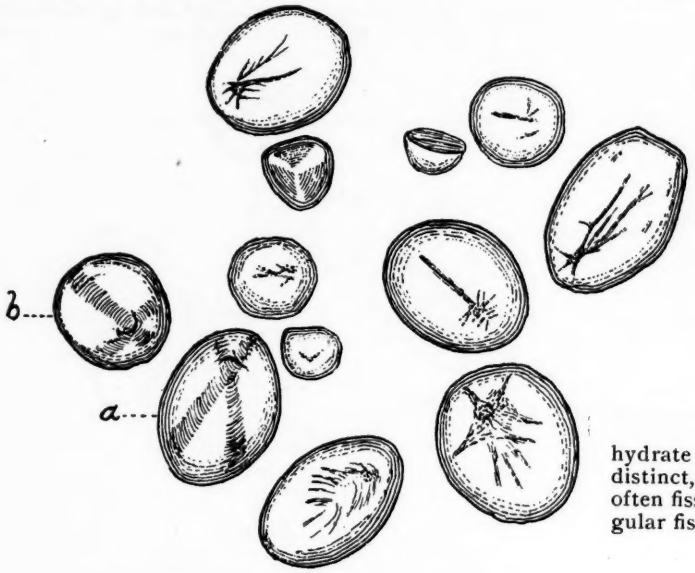

FIG. 9.—STARCH OF PHYTOLACCA ROOT.

In Spanish and Russian licorice the starch grains are quite small and are not dissimilar. The grains of Spanish licorice are smooth, to the eye appearing homogeneous, swelling evenly or nearly so, with potassium hydrate solution, possessing no evident concentric markings, having a central or sub-central small and rounded hilum, which is rarely angularly fissured.

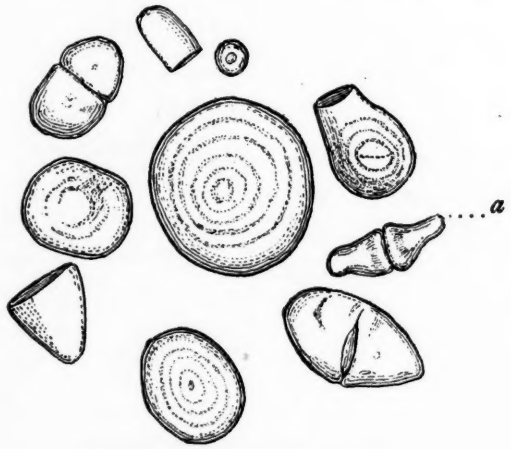

FIG. 10.—STARCH OF PAREIRA.

The grains are mostly spheroidal, or sometimes ellipsoidal or ovate, etc. (See Fig. 12.)

The grains of Russian licorice appear to average slightly larger, and to be less commonly elongated, but they are so similar to those of the common licorice that it seems doubtful if any characters in them can be relied upon for infallibly distinguishing the two drugs. Fig. 13 shows a collection of grains from the Russian species.

The cells of the cortex of ipecacuanha are heavily charged with spherical, oblong, hemispherical or somewhat angular starch grains. The grains are superficially smooth, have a central or sub-central hilum, but no concentric markings that are visible until the grains begin to swell under the action of potassium

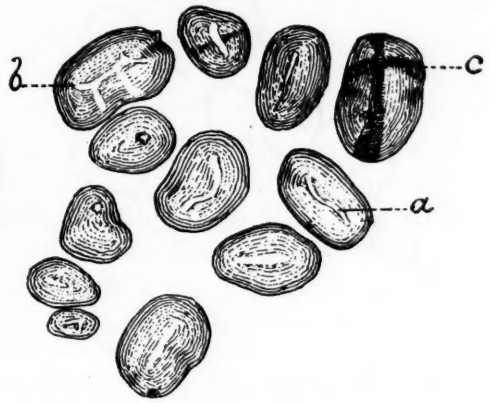

FIG. 11.—STARCH OF ALTHÆA.

hydrate solution, and even then they are few and indistinct, or in many cases invisible. The grains are often fissured through the hilum with straight or angular fissures. (See Fig. 14.)

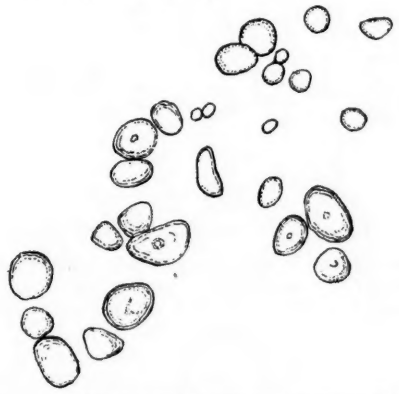

FIG. 12.—STARCH OF SPANISH LICORICE ROOT.

The starch of gelsemium occurs in the bark and medullary rays. The grains are small, spheroidal, or somewhat flattened, with a central or sub-central

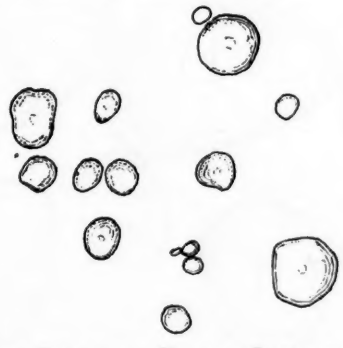

FIG. 13.—STARCH OF RUSSIAN LICORICE ROOT.

hilum, and with concentric markings frequently visible on the grains of larger size. These are but one or two in number usually, and not very distinct until the

grains begin to swell under the influence of potassium hydrate. A slight fissuring at the hilum is sometimes observable. (See Fig. 15.)

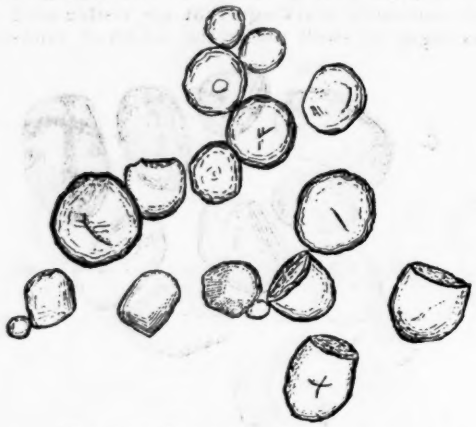

FIG. 14.—STARCH OF IPECACUANHA.

Calumba starch is quite large grained. The grains are circular, oval or ovoid in outline, not infrequently somewhat flattened or lenticular, having the hilum

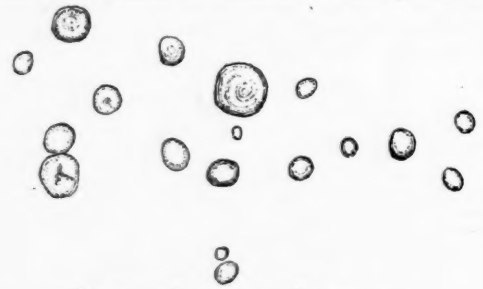

FIG. 15.—STARCH OF GELSEMIUM.

somewhat eccentric, as a usual thing, and showing one or more curved markings. The grains are superficially smooth and the hilum frequently conspicuously

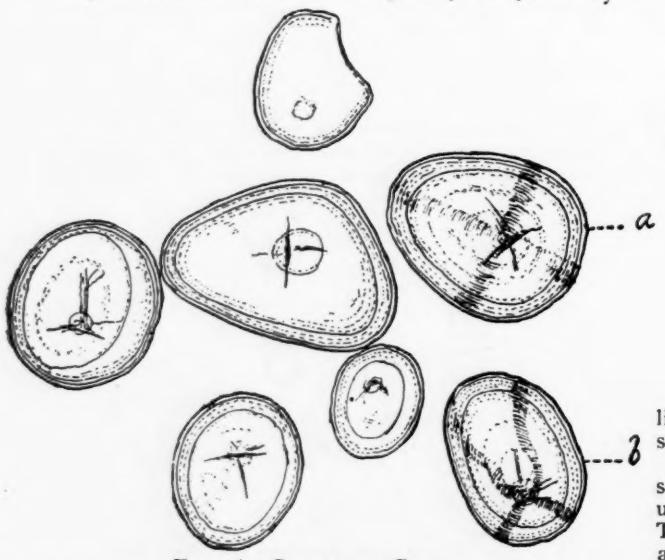

FIG. 16.—STARCH OF CALUMBA.

fissured in a radial manner. *a* and *b*, Fig. 16, show grains as they appear when seen by polarized light.

Fig. 17 shows a group of starch grains from the root of belladonna. The grains may be described as spherical, prolately-spheroidal, or not infrequently double or hemispheroidal. The hilum is central or somewhat eccentric, and marked either by a small, dark, circular spot, or by faint, radiating, darkish lines. Concentric circular lines about hilum few and indistinct, even if treatment with potassium hydrate solution be resorted to. *a* is a grain as seen by polarized light.

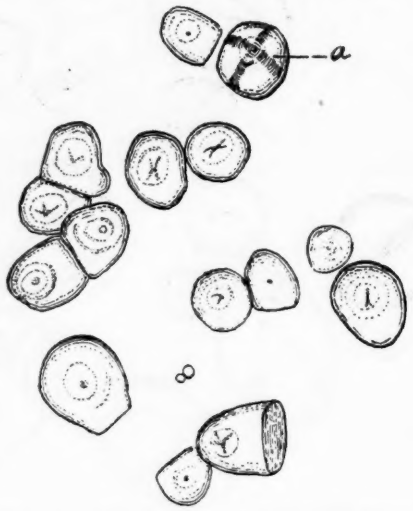

FIG. 17.—STARCH OF BELLADONNA ROOT.

The starch grains of sumbul are smooth, oblong, round or somewhat irregular, and often double. The hilum is central or sub-central, not infrequently fissured with a single straight fissure, or with a group of radiating ones. The one or two concentric circular

FIG. 18.—STARCH OF SUMBUL.

lines about the hilum are usually unrecognizable until a swelling reagent is employed. (See Fig. 18.)

Fig. 19 shows the starch of official rhubarb. It consists of rather small, rounded, but more or less irregular grains, having a central or sub-central hilum. The latter is sometimes angularly fissured, and the area about it is optically less dense than the peripheral region of the grain. Many of the grains are angular or many-sided from mutual pressure within the cell, but double or multiple grains are seldom seen. *a* is a grain as seen by polarized light.

The grains of rhapontic rhubarb, Fig. 20, appear to be smoother and to average somewhat smaller than those of the official species. The hilum is, also, so far as these observations have extended, more commonly fissured. The differences, however, between the two starches are not of a pronounced character, and further study is required, and the comparison of a large number of specimens before it can be stated with positiveness that these characters can be relied on for distinguishing the drugs.

Rumex crispus, although not distantly related to rhubarb, has starch grains of quite a different character. (See Fig. 21.) The grains are mostly smooth,

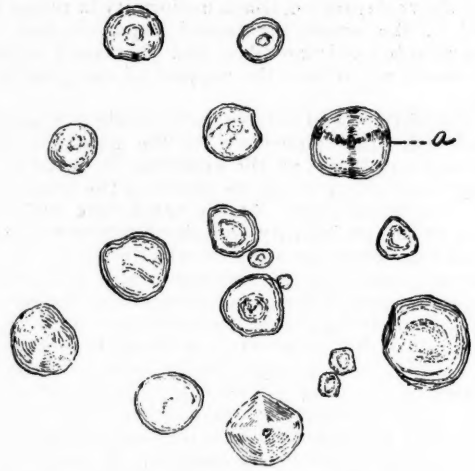

FIG. 19.—STARCH OF RHEUM.

much elongated, ellipsoidal, having a central or subcentral nucleus. Running lengthwise of them, along the center, is a darker streak; it is usually simple, but sometimes branching. The cross of polarization is extremely oblique, as shown in *a*.

In the root of piper methysticum the starch is abundant in the cortex and medullary rays. The grains are large, spherical or spheroidal, with the hilum cen-

FIG. 20.—STARCH OF RHEUM RHAPONTICUM.

tral or somewhat eccentric, and in the larger grains usually distinctly radiately fissured. On the larger sized grains, also, one or more concentric markings are visible. Double grains are not infrequently found, but the majority are single. *a*, Fig. 22, shows a grain as seen by polarized light.

Fig. 23 shows a group of grains from the root of asclepias. The grains are small, rounded, sometimes double, treble or quadruple, with a central hilum, about which is an area optically less refractive than the peripheral portion of the grain. After the grains have begun to swell, under the action of potassium hydrate, or sometimes without the aid of any reagent, one concentric circle may be seen about the nucleus.

The starch of symphytum is illustrated in Fig. 24. It consists of small sized spherical or spheroidal grains, with a central, usually angularly fissured hilum, and

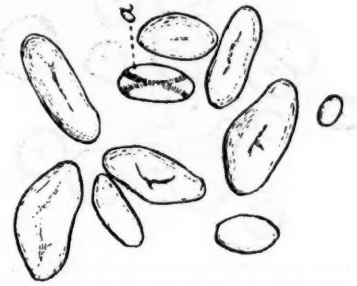

FIG. 21.—STARCH OF RUMEX CRISPUS.

showing but rarely any concentric markings. Double and hemispherical grains are not rare. The hilum and fissures are faint and often quite invisible until incipient swelling is produced by the action of potassium hydrate.

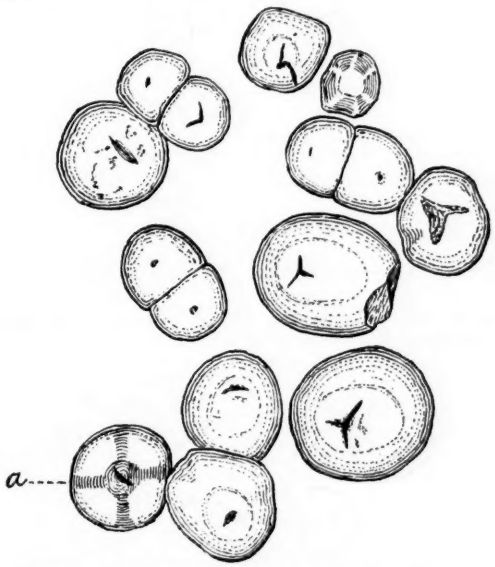

FIG. 22.—STARCH OF PIPER METHYSTICUM.

The starch of masterwort, Fig. 25, is quite small grained, and the grains are also usually spherical or spheroidal, with a central or sub-central hilum and faint concentric markings. The hilum is sometimes, though rarely, faintly fissured in a radial manner.

FIG. 23.—STARCH OF ASCLEPIAS.

The starch of apocynum, Fig. 26, is composed of medium-sized grains, which are occasionally nearly rounded, more commonly somewhat elongated, and

rarely very considerably elongated, as shown in *a*. In the smaller grains the hilum appears as a minute, round spot, at or near the center. In the larger, its

FIG. 24.—STARCH OF SYMPHYTUM.

position is usually marked by a dark, curved line. The double character of some of the elongated grains is

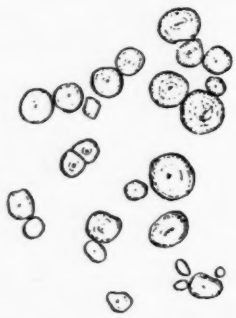

FIG. 25.—STARCH OF MASTERWORT.

shown by the polariscope. (See *a*.) Many of the grains are multiple, as shown in *b*.

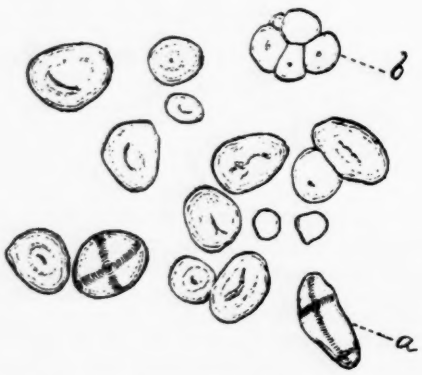

FIG. 26.—STARCH OF APOCYNUM.

Uniformity in Prescription Prices.*

A paper recently appeared in the AMERICAN DRUGGIST AND PHARMACEUTICAL RECORD on this subject. We reproduce it in this issue of the *Review*.

It is doubtless a subject in which both the pharmacist and the public are interested.

The arguments of the writer of the paper referred to are not without weight, but we do not believe that even an approximately uniform price-scale for prescriptions could be decided upon.

The trade of each pharmacy, both in quantity and quality, must of necessity govern the prices charged for prescriptions, and the conditions as to rent and kindred expenses of each pharmacy will naturally be taken into consideration.

Not only do these conditions differ in different sections of our country, but the differences are frequently as great in different localities of the same city or State.

The writer has made this observation from many years of personal identification with pharmacy in various sections of the United States, from the Atlantic to the Pacific coast. His experience strengthens the belief as above expressed, that a uniformity in prices suggested in the above mentioned paper, is not only impracticable but impossible, and that such a movement would not receive the support of one pharmacist in fifty.

It is doubtless well to have such a scale as suggested in each individual pharmacy for the guidance of the numerous employees of the establishment, each scale arranged according to the demands of the situation in each individual case. At the same time such scale would, in all probability, be absolutely worthless in another pharmacy but a few blocks distant.

The proposition that on all copies of a prescription given to customers the prices charged for the same be marked in plain figures, is certainly an excellent one. As a result of this, however, it is altogether likely that some unprincipled druggist would take advantage of the same by charging a lower price than previously paid in order to affect the confidence of his customer in the other pharmacist. As it is, if he is unable to ascertain the price previously charged, in compounding a prescription from the copy itself, it is the invariable custom to make a price so low that it will certainly be under that charged for the original.

Of the two evils we should prefer the former, as there would be an opportunity for pharmacists who desire to do so to protect each other, and at the same time secure a satisfactory price for such prescription.

*Editorial in *The Pacific Drug Review*, August, 1893.

Differentiation Between Piperazin and Albumen in Urine.—Some time since it was announced by Dr. Roerig that the appearance of albumen in the urine followed the administration of piperazin. Dr. Biesenthal states (*Therap. Monatsheft*) that this is incorrect, the error arising from the fact that the supposed albumen precipitated by picric acid was in reality piperazin, itself precipitated as piperazin picrate. One part of piperazin dissolved in 20,000 of water yields a decided precipitate with picric acid. Within four hours after ingesting 1.5 grammes [22 grains] of piperazin, the precipitate thrown down by picric acid amounts to one-fifth of the volume of the acid used. Under the microscope this precipitate shows the characteristic six-sided groups of crystals To further establish the identity of the piperazin picrate add hydrochloric acid to it, agitate the mixture with ether to remove the picric acid and add potassio-bismuth-iodide solution when the piperazin will form the characteristic microscopic double iodo-bismuth salt. The piperazin can also be detected in the urine itself by first acidifying with hydrochloric acid and adding the potassio-iodo-bismuth iodide solution. Albumen may be detected in the presence of piperazin by the use of acetic acid for instance. In acidified urine albumen coagulates and the coagulum is permanent in either heat or cold ; while the crystalline precipitate of piperazin picrate disappears on heating to reappear on cooling.

Pharmaceutical Progress

Iodoform-salol is a solution of iodoform in melted salol, which crystallizes on cooling It has been used by Reynier and Wall (*Therap. Blatter*, 1893, 233) as a disinfectant for injection into fistulous processes and suppurating cavities.

Spiegler's albumen reagent has been modified so that it is even a more delicate test for albumen, detecting 1 in 350,000. Its composition: Mercuric chloride, 2.0; tartaric acid, 1.0; distilled water, 50.0, and glycerin, 5.0.—*Pharm. Centralhalle*, 1893, 424.

Preservation of Eggs.—A writer in the *Apotheker Zeitung* states that he finds it possible to preserve eggs in a fresh condition by packing them in shavings in a stone vessel and filling up the vessel with paraffin oil. Eggs so treated were found perfectly fresh after being immersed for several months.

How to Use Wood Tar.—Dr. Ed. Stern advises (*Therap. Monat.*) that, before using, wood tar be allowed to stand for several weeks and that the upper two-thirds, which will be found lighter, be poured off and used for making spirit of tar, etc. He claims that it is much the more valuable portion.

Reduction of Zinc in the Wet Way.—Crude zinc oxide is boiled in a concentrated solution of magnesium chloride under a pressure of 2 to 3 atmospheres, and the solution then electrolysed. The free zinc precipitates and the magnesium oxychloride formed is dissolved in hydrochloric acid and used again (*Industrie Blätter*).

Solution of Salicylic Acid.—M. Jaudon prepares a concentrated solution of this acid by dissolving eight grammes in twenty-four grammes of alcohol of 90° strength. He then dissolves four grammes of borax in eight of neutral glycerin, mixes the two solutions, and adds sufficient distilled water to make one hundred grammes. An eight per cent. solution of the acid is thus obtained (*Rép. de pharm.* [3], v., 341).

Effect of Senna and Rhubarb on Urine Tests.—Jung has noted (*Pharm. Zeit.*) that after the ingestion of rhubarb or senna the urine gives the bismuth reaction for sugar. In the *Pharmaceutische Centralhalle* it is stated that urine passed after the administration of rhubarb reduces both Nylander's and Knapp's solutions and decolorizes Fehling's solution without causing precipitation.

New Process for Saccharated Oxide of Iron.—The following is proposed by Keutmann (*Int. Pharm. General Anz*): Dissolve ferrous sulphate in water, precipitate with diluted ammonia water, having the bottle filled to the stopper. Stop tightly and allow to settle; draw off the supernatant water by means of a siphon and fill immediately with hot water, repeating the operation until the wash water no longer gives a sulphate reaction. Then place the precipitate in a porcelain dish containing the pulverized sugar, warm, add a small quantity of alkali and oxidize the ferrous oxide with hydrogen peroxide.

As Antidote for Hypochlorites, such as Javelle water, Labbaraque's solution, etc., Carles (*Therap Blätter*) recommends solutions of neutral sodium sulphite or hyposulphite. Ammonium chloride or sulphate also decompose hypochlorites at the temperature of the body. In case of these salts not being obtainable Carles recommends that the patient drink urine, the urates in which act as an antidote to the hypochlorites.

Papain.—It is found by Sittman (*Münch. med. Woch.*) that one centigramme of papain suffices to change ten grammes of coagulated white of egg, mixed with one hundred c.c of water at a temperature of 40° to 45°, into an opalescent milky fluid in the course of two hours, no free albumen remaining. The action is the same, whether the medium be alkaline or faintly acid. Taken in doses of from three to five centigrammes, made into a thin paste, directly after each meal, when the large proportion of albuminous matter was consumed, cessation of pain is said to have been caused in acute gastritis after two or three doses.

Nature of the Staining Process of Vegetable Tissues.—It has long been a matter of controversy whether the coloring of cellulose fibers by staining reagents is dependent on a chemical process or merely on a mechanical union of the particles of the pigment with those of the cellulose. Herr G. Spohn has attempted to set this question at rest by a careful microscopical examination of cotton-wool stained by mineral pigments He found no change whatever in the structure of the fiber itself. Even when the fibers were macerated before staining with alizarin, they acted simply as a carrier of the pigment, on which the macerating fluid acts chemically. In all cases, according to these observations, the combination of the pigment with the fiber depends entirely on purely mechanical causes (Dingler's *Polytechn. Journ.*, 1893, Heft 9. Through *Pharm. Journ*).

Determination of Diastase in the Leaves and Stems of Plants.—While the majority of physiologists believe that the conversion of starch into sugar is always the result of the action of a diastase ferment, Professor Wortmann has maintained the contrary. M. St. Jentys now attempts to explain the failure of Wortmann to find diastase in the aqueous extract of leaves and stems on the following grounds. It is probable, he considers, that the diastase is formed only in small quantities, as it is required for the conversion of starch into sugar. The presence of tannin in the aqueous extract causes the precipitation of the starch, which is then acted on only with great difficulty by diastase, and the tannin also precipitates the diastase itself. Finally, diastase possesses only a very feeble power of diffusion, and therefore, when contained within cells, only passes into the solution after the complete destruction of the cell-walls, and in company with the tannins, which then precipitate it (*Verhandl. Akad. Wiss. Krakau*, 1893, 47 pp. Through *Pharm. Journ*).

Oleum Terebinthinæ.—Chas. T. P. Fennell, in a paper presented at the American Pharmaceutical Association meeting, after quoting the pharmacopœial requirements, says that neither the specific gravity, the flash test, nor qualitative tests for usual impurities are of much value because of the ingenuity and variety of adulterations. The most satisfactory results are obtained by fractional distillation and examination of the color, odor, density, etc., of the fractions. The only constant factor for purity is the boiling point, the pure oil boiling between 156° and 162°C., and distilling completely below 180°C. For a general practical test the following is recommended: Float a watch crystal containing 5 c.c. of turpentine upon boiling hot water for fifteen minutes; a ponderable residue indicates impurity, which may be resin, petroleum or paraffin oils.

Testing of Cocaine Hydrochloride.—One of the most useful means of identifying and ascertaining the purity of alkaloids and their salts is the melting point, and in the case of cocaine salts it is especially useful. There are, however, great discrepancies in the statements to be found in various works. Thus, for instance, the melting point of cocaine hydrochloride is given as 181°.5 C. in the Italian Pharmacopœia, as well as by Beilstein and in Schmidt's "Pharmaceutical Chemistry." In Watts' "Dictionary" the melting point of this salt is said to vary between 181° and 185° C. Hesse gives 185°–186° (*Pharm. Journ*, [3], xxi., 1,110). In a paper read at a meeting of the Berlin Pharmaceutical Society, Dr. Kinzel has recently expressed the opinion that all these data are too low for pure cocaine hydrochloride, and that a well purified cocaine hydrochloride should have a melting point of from 201° to 202° C. This is so very much in excess of any previous observations that there is reason to think the statement must be due to some mistake, or that the numbers given are misprints.—(*Pharm. Centralh.*, xiv., 38. Through *Pharm. Jour.*)

To Coat Pills with Salol.—It has occurred to Dr. G. Oeder independently of the prior suggestions of Ceppi and of Yvou, that salol would be a good coating for pills intended to act on the bowels alone and not in the stomach. He recommends the following method of procedure: Place in a corner of a shallow dish with walls not too thick, such, for instance, as an enameled iron developing tray or a shallow evaporating dish; about 1 to 1.5 grammes (15 to 23 grains) of salol. Warm the entire bottom of the vessel gently and at 40° C. the salol will form an obaginous colorless fluid. Still holding the vessel over the flame throw thirty of the pills to be coated into the melted salol. This is done before removing from the flame so as to prevent the sudden chilling and consequent crystallization of the salol. Now remove and roll the pills about rapidly in the vessel blowing on them the while, and preventing their sticking together by the rapid agitation of the vessel. In about a minute or less the salol will be firmly attached to the pills. If the coating is not thick enough the process may be repeated. Ordinarily for pills of the usual size 0.6 gramme (9 grains) of salol are sufficient coating for 30 pills, the amount of coating being determined by weighing the pills before and after coating them.

The Detection of Alkalies in Cacao.—The several alkalies are used by different manufacturers to render their cacao preparations soluble, hence the determination of their presence is of interest. Stutz states (*Zeitschrift für Aug. Chemie*) that pure cacao has a small proportion of ash which does not effervesce on the addition of an acid. An addition of soda or of potassa will be indicated by strong effervescence. The aqueous extract of pure cacao contains about one-third of the quantity of the total ash of the cacao. If fixed alkalies have been added, they will be extracted in the water and raise the percentage of ash contained therein. Pure cacaos contain less than 0.1 per cent. of nitrogen as ammonia. If ammonium carbonate has been used in the manufacture, it will be found to contain more than 0.25 per cent. of nitrogen as ammonia. To examine cacao powder for ammonia, ten grammes are placed in an Erlenmeyer flask of about 750 cubic centimeters' capacity, 200 cubic centimeters of water, and a sufficient quantity of burned magnesia added. This mixture is boiled for twenty minutes, and the vapor is received in titrated sulphuric acid.

Papoid in Consumption.—Dr. E. A. Wood, writing in *The Pittsburgh Medical Review*, says he has employed papoid in ozena, ulcers of the larynx, and in ulcers and cavities in phthisis pulmonalis. He used the drug, first by insufflation, but latterly by using the glycerole of papoid by the atomizer. Since the eight months of trial he states that he has been more and more convinced of its efficiency in the lesions named.

The treatment followed is: 1st. Bromide of gold and arsenic internally, ten drops in water before meals. 2d. Depress the tongue that the spray of papoid may thoroughly reach all parts of the larynx. 3d. Cause the patient to breathe deeply that the drug may reach all parts of the bronchioles. 4th. Employ the spray for at least ten minutes at each sitting. 5th. Use the spray morning and evening.

If there is no ulcer the papoid can do no good used as a spray. To obtain the best results the glycerole should be diluted with an equal amount of alcohol.

When papoid is used as a digestive ferment in cases of consumption where there is debility, weak digestion, and the suspicion of congested mucous patches, the drug should not be given in concentrated form, lest it dissolve the weakened tissues. In that case incorporate the papoid with the food before it is eaten. Sometimes it is better to partially prepeptonize the food.

Paraffinum Molle.—There has always been considerable mystery as to the origin of vaseline and similar preparations of petroleum, especially in regard to what the "residues" are from which they are made. Professor S. P. Sadtler, of the Philadelphia College of Pharmacy, in his article on American petroleum contributed to Thorpe's Dictionary of Technical Chemistry, throws light on the matter. The residues in question are what remains in the still after the burning oils, or lighter fractions, are distilled off *in vacuo* without cracking. By "cracking" is meant the process in which the heavy oils are distilled at a high temperature, the condensed vapor being returned again to the still. In this process the heavy oils are split up, and a larger yield of burning oil is obtained. Distillation *in vacuo* is carried out by the use of superheated steam instead of direct firing. The heavy or reduced oils thereby obtained as a residuum are either brought into the market at once without further treatment, or after a bone-black filtration. This production of filtered oils is usually combined with the manufacture of vaseline or of petrolatum, as it is now known in the U. S. Pharmacopœia. Taking a vacuum residuum as the raw material, this is melted and run on to filters of fine granular well-dried bone-black. The filters are either steam-jacketed or are placed in rooms heated by steam-coils to 120° F. or higher. The first runnings are colorless; and all up to a certain grade of color go to the manufacture of vaseline. Beyond that the filtrate is known as "filtered cylinder-oil" and is used as a lubricant exclusively.—*Chemist and Druggist.*

Papain.*

By Frederick Davis, B.Sc.

Papain is the active principle of the *Carica papaya* or papaw tree. This plant, a native of South America, West Indies, and other parts enjoying a tropical temperature, I am informed by Mr. Jackson, A. L. S., of Kew, varies in height from five to twenty feet, according to age. It is of an herbaceous character, and when well founded bears a plentiful and continuous supply of fruit.

The cylindrical trunk is simple, and bears at the summit a tuft of palmately lobed leaves.

The stameniferous flowers are arranged in a racemose manner, whilst the pistillate flowers are for the most part sessile.

The plant is diœcious, belonging to the Passifloræ. The trunk and leaves abound in a milky juice, which possesses the power of rendering the toughest meat tender in a very short period of time.

The fruit termed the "papaw" is employed by the natives in a variety of ways, in its unripe state being boiled and used as a vegetable, and in its ripe state eaten as dessert. The leaves are used in washing in the place of soap. Papain may be prepared from the juice of the plant by treating with alcohol, dehydrating the resulting precipitate and extracting with water, preferably at a temperature from 36° to 40° C. The commercial varieties differ largely, not only in color and appearance, but to a great extent in proteolytic action. The color varies from light brown to nearly white, and I have observed generally the more nearly colorless the sample the greater its activity. Papain is an albuminoid body, but differs from peptones in the fact of not yielding a precipitate with either acetate of lead or perchloride of mercury.

As previously stated the commercial samples of papain vary considerably. I therefore considered it necessary to subject some of these to dialysis, thus obtaining the active principle in a fairly pure state. It may be on this account that past researchers obtained such varying and conflicting results.

If a larger quantity of water be employed in experimenting with the same quantity of papain and dried fibrin or albumen, it will be found to influence the final results very markedly, also that with a larger quantity of water, a smaller quantity of the same sample of papain and the same quantity of fibrin a different digestive result is arrived at, the temperature being maintained throughout at 35° C.

Albumen was employed in the following instances, being more reliable for experimental purposes than dried fibrin.

EXPERIMENT NO. I.

Albumen	3 grammes
Papain	.3 gramme
Distilled water	50 c.c.

Digested 38 hours at 35° C.

NEUTRAL SOLUTION.

Result:

Digested	1.785
Residue	1.215

EXPERIMENT NO. II.

Albumen	3 grammes
Papain	.25 gramme
Distilled water	100 c.c.

Digested 48 hours at 35° C.

NEUTRAL SOLUTION.

Result:

Digested	1.935
Residue	1.065

EXPERIMENT NO. III.

Albumen	3 grammes
Papain	.3 gramme
Hydrochloric acid	(.005 per cent.)
Water to	500 c. c.

Digested 48 hours. Temperature 35° C.

Result:

Digested	2.005
Residue	.995

EXPERIMENT NO. IV.

Albumen	3 grammes
Papain	.3 gramme
Hydrochloric acid	(.050 per cent.)
Water	500 c. c.

Digested 48 hours. Temperature 35° C.

Result:

Digested	None
Residue	3 grammes

With a higher percentage of acid the results compare with the last experiment, namely, no conversion into peptones whatever. The presence or absence of peptones was ascertained by the copper test. With regard to digestion in alkaline solution, papain is found to increase in proteolytic action if the alkalinity is not above 0.25 per cent., carbonate of soda being employed for the purpose.

EXPERIMENT, NO. V.

Albumen	3 grammes
Papain	.3 gramme
Sodium carbonate	(0.25 per cent.)
Water	100 c. c.

Digested 48 hours. Temperature 35° C.

Result:

Digested	2.358
Residue	.642

EXPERIMENT NO. VI.

Albumen	3 grammes
Papain	.3 gramme
Sodium carbonate	(0.20 per cent.)
Water	500 c.c.

Digested 48 hours. Temperature 35° C.

Result:

Digested	2.507
Residue	.493

Digestion takes place in media containing a much larger percentage of sodium carbonate, but in no way approaching the above results. The action of papain with milk is in every respect in ratio with the foregoing results, but the fat is not in any way emulsified, excepting of course to the extent of the alkalinity of the medium. Recapitulating we find papain to be active as a digestive in neutral and weakly alkaline media, but its action entirely stopped by the presence of .050 per cent. of hydrochloric acid.

Statements have been made that "papain" is capable of digesting living tissue and an experiment is quoted in Christy's "New Commercial Plants and Drugs" (No. 8) where Professor Finkler says he found certain preparations of papain to dissolve living frogs and worms. I have experimented largely in this direction and can say positively the frogs were in no case digested; death occurred, and the amphibean decomposed, but no peptones were formed. In fact the acid developed in the dermis of the frog is sufficient to prevent the action of papain. Papain appears to act as a poison to the frog. The creature will not live for long in a solution of papain, but decomposition certainly does not take place until after the death of the animal. I think, therefore, nothing further need be said upon this point.

With regard to the products of fermentation by the action of papain upon proteids, I have found undoubtedly a resemblance to that of trypsin, and by following

* Read before the British Pharmaceutical Conference, Notingham, 1893.*

the suggestions of Dr. Sidney Martin, of University College, proved positively the formation of various amido-acids, tyrosine, and leucine, and by further decomposition indol was produced.

In conclusion I have to thank not only Dr. Sidney Martin for most valuable suggestions, but also Messrs. Christy and B. Kühn for samples of papain and specimens of the fruits.

The Determination of the Action of Diastase on Starch.*

By D. B. Dott, F.R.S.E.

The action of diastase on starch is employed analytically for two purposes: (1) the determination of diastase (or rather of diastasic power, as the molecular weight of diastase is unknown) and (2) the determination of starch. For the former purpose it is most usual to allow a known weight of the diastasic solution to act on a known amount of starch paste at a certain temperature until the mixture ceases to give a blue color with iodine; while for the second purpose it is customary after a similar operation to determine, by means of Fehling's solution, the amount of sugar formed, it having been ascertained that for a particular temperature the proportions of sugar and dextrin are practically constant. The work of C. O'Sullivan in this department is specially well known. He found that by the action of diastase on starch solution at the temperature of 63° C. the starch was apparently entirely converted into maltose and dextrin, according to the equation—

$$C_{18}H_{30}O_{15}+H_2O = C_6H_{10}O_5+C_{12}H_{22}O_{11}.$$

The same proportions are formed at temperatures near 63°, but for much lower or higher temperatures the equation varies. Wherefore it might fairly be assumed that by acting on starch solution with diastasic solution at 60°–65° for a certain time the diastase strength would be correctly estimated by determining the amount of maltose formed. Two objections occur to the use of the iodine method: (1) it would be difficult to make sure that the starch solution was homogeneous throughout, and so long as any particles remained unconverted by the diastase the blue color would be developed by iodine; (2) that the end reaction with iodine is not very sharp, the blue color passing to violet and the latter changing to red-brown which in turn gradually disappears. On the other hand the reaction of maltose with Fehling's solution is well defined, so that, *ceteris paribus*, the determination of the quantity of maltose formed would seem the best way of determining diastase.

The experiments next described may help to elucidate the question.

1. The starch solution was in this, as in other cases, prepared by heating 20 grammes of arrowroot with 800 c.c. of water, and diluting to one liter. The starch is probably only in a state of quasi solution, not in true solution; the same holding good of other colloid bodies. The malt extract solution was prepared by dissolving and diluting 5 grammes of extract to 100 c.c.; 5 c.c. of this solution were allowed to react with 400 c.c. of the starch solution for half an hour at 55°–58° C., 10 c.c. of strong soda solution being then added, and the whole diluted to 500 c.c. This was then added to 10 c.c. of boiling Fehling's solution, and the amount required to completely reduce noted; 21.5 c.c. were required.

2. The same experiment was repeated, using the same starch solution. The amount required to reduce was again found to be 21.5 c.c.

3. The same experiment was performed, but in place of starch solution, which had been heated just sufficiently to gelatinize, the starch solution was boiled for forty minutes. The amount of extract solution required to reduce was 39.0 c.c.

4. In this experiment a fresh malt extract was used, and the starch gelatinized at 93°–95° C. The test was made with the freshly prepared starch paste. Amount required to reduce the copper solution was 33.0 c.c.

5. Identical with No. 4, except that the starch solution prepared at 93°–95° was kept for forty-eight hours before use. The amount required to reduce was 42.5 c.c.

6. Malt extract solution prepared and experiment conducted as before described, and the starch solution prepared at 90°–95° C. Required to reduce Fehling's solution, 36.0 c.c.

7. Same in all respects, except that only half the quantity of extract was used in the reaction. Required to reduce, 73.5 c.c.

8. Same as experiment No. 6, but in this case the starch solution was boiled for twenty minutes. It required to reduce the Fehling, 57.0 c.c.

9. 125 c.c. of starch solution, as in No. 6, was digested at 38° C. (100° F.) with 5 c.c. of the extract solution, and the point noted when it ceased to give any distinct color with iodine. Time required was thirty-four minutes.

10. Same as No. 9, except that the starch solution of No. 8 experiment was employed. Time required was thirty three minutes.

11. 125 c.c. of starch solution was digested with 5 c.c. of the extract solution at about 57° C. until no reaction was given by iodine. Time required was fifteen minutes.

12. Same experiment as No. 11, but digestion was conducted at a temperature of 36°–38° C. Time required was about thirty minutes.

Other experiments were tried, but it would only complicate the question to give further details. The experiments No. 1 and No. 2 show that when the same starch solution is employed, the results obtained by estimating the maltose are constant. The experiments Nos. 2, 3, 6, and 8 show that serious variations are caused in the amounts of maltose indicated, by the use of starch solutions prepared in different ways; the general rule being that when the starch solution has been well boiled, the amount of maltose indicated is much less than when the starch solution has been prepared at a temperature just under boiling It may be noted here that the starch solution, even when fully boiling, did not attain the temperature of 100°, but only 98° (uncorrected). The experiments Nos. 6 and 7 show that the mass of diastasic matter employed does not appreciably affect the result (within limits at least) when excess of starch is present. The experiments Nos. 9 and 10 indicate that the iodine method gives practically concurrent results, whether the starch has been gelatinized at the higher or lower temperature. These results would seem to show that a slightly boiled starch solution favors the formation of maltose, while a thoroughly boiled solution favors the formation of dextrin. The experiments 11 and 12 confirm what has been previously stated as to the more rapid hydrolysis of the starch at the higher temperature, and show the importance of giving the conditions of experiment, when stating the diastasic value of a malt extract.

The general conclusions are:

1. That the diastasic value cannot be accurately determined by the amount of maltose formed, unless

* Read before the British Pharmaceutical Conference, Nottingham, 1893.

the starch solution is always prepared in the same way.

2. That there would be great difficulty in fixing a standard method for the preparation of starch solution, such as would insure a constant result with the same proportion of diastase.

3. That as the method of determining diastase by testing for unaltered starch and erythro-dextrin with iodine is not appreciably affected by the manner in which the starch has been gelatinized, that process must be regarded as the best at present known.

4. That by the action of malt extract on starch solution (2 per cent.) at 40° C., with 1 part of extract to 5 parts of arrowroot, the mixture should cease to give a distinct coloration with iodine after thirty minutes.

This result was obtained with the malt extract used in experiments 11 and 12, and is not an exceptional result for a good extract. In a recently published article the writer states that he had never found a liquid malt extract of any diastasic value. This does not accord with my experience, as I have on several occasions examined a liquid extract which had been kept for a considerable time, and yet maintained the diastasic power given above as being indicated by a good extract of malt.

Mr. Grierson said he had listened with much interest to this paper, and if he had gathered its tenor aright, Mr. Dott appeared to have altered his mind as to the best method of determining the diastasic action of malt extract. Last year when he read a paper on this subject, he questioned the reliability of the iodine method, and considered that the best method was to determine the amount of maltose formed, but now he seemed to intimate that the iodine method was the most reliable. He said that thirty minutes was the time required for malt extract to convert its own weight of starch, but with good malt extracts he considered ten minutes was quite sufficient, and he had examined many in which the process was accomplished in five minutes. He saw no difficulty in getting an homogeneous starch solution when working with small quantities such as were used in these experiments. But the kind of starch was most important, and with arrowroot starch a good malt extract ought to convert its own weight in not more than ten minutes. He could corroborate the author's statement that there were many fluid malts in the market which were very active.

Alphonse de Candolle.

The passing away of this famous naturalist receives sympathetic notice in *Nature*.

Alphonse Louis Pierre Pyramus de Candolle, to give him his full name, died on April 4 at his house in the Cour de St. Pierre at Geneva, in the eighty-seventh year of his age. His death in a manner closes an epoch. With him passes away the last great representative of the French school of botanical taxonomy—to which, through Bentham, the English was in a great measure affiliated—and which had its root in Lamarck, whom the world in general scarcely realizes as a botanist.

Geneva has long been remarkable as the home of a number of families whose members have cultivated science with distinction. These are for the most part descendants of French Protestants who have emigrated from the south of France. Among these the de Candolles stand out in pre-eminence; the third generation still sees them in the front rank of the scientific world.

Alphonse de Candolle's father, Augustin Pyramus, was a man who would have been remarkable in any age. Gifted with astonishing energy and enthusiasm, a singular power of grasping and co-ordinating large masses of detail, his buoyant charm of manner inspired even the citizens of Geneva with interest and conviction in the supreme importance of taxonomic studies.

The facts to be told of Alphonse de Candolle's life are simple. Born October 27, 1806, at Paris, he took the degree of bachelor of science at Geneva in 1825, and of doctor of laws with great distinction in 1829. The influence of his legal training probably gave an impress to his work and character all through life. In 1831 he began to assist his father in his duties as professor of botany, and he succeeded him in the chair in 1835. He held it till 1850, when he left it, owing to political events. The remainder of his life he passed as a private man of science. But during middle life he fulfilled with dignity, and not without influence, the duties of a citizen which his character and social position in some sort imposed upon him. After serving as a member of the Representative Council of Geneva, he was a member of the Grand Council from 1862 to 1866. He was the first to advocte the "referendum" in political affairs; he exertedahimself to effect numerous reforms in economic and sanitary matters; and by obtaining the use of postage stamps for his canton he appears to have paved the way for their general introduction into Switzerland.

The earliest and perhaps the best of de Candolle's botanical works is his monograph of the *Campanulaceæ*, published in 1831. It has stoodits ground more solidly than is often the case with the taxonomic work of the time, and its conclusions have been in the main adopted in the later revision of the order by Bentham and Hooker.

In early life the writings of Humboldt inspired de Candolle, as they have done many young men, with the impulse to travel. Family circumstances, however, forbade it. But the fascination of phyto-geographical problems had taken possession of him, and the vast assemblage of specific forms which continually passed through his hands must have supplied him with inexhaustible food for reflection.

In 1855 appeared his *Géographie botanique raisonnée*, which was the most important work of his life. It would be impossible in a short space to appreciate this justly. It has been complained that it led to no direct conclusion; and it is all but inexplicable that the author missed seeing that the immense mass of facts he had collected really pointed directly to evolution as the key to its explanation. But the character of the man is an element which must not be overlooked. Essentially in method a statistician, he believed these facts, properly marshaled, would evolve their own law. But scientific method, like other calculating machines, will not evolve more than is implicitly put into it. De Candolle, it must be admitted, neither possessed nor had much sympathy with that touch of imagination akin to inspiration, which by some unconscious cerebral integration sees an even wider principle underlying the facts which are contemplated than by any method of manipulation can be educed from them. But it may be doubted whether a study of the distribution problem would ever have led to evolution directly. The essence of the Darwinian theory was the discovery of a possible, at any rate conceivable, *modus operandi*. This was the result of an attack from the biological side. The phenomena on a large scale which geographical distribution present are too remote from their ultimate cause to immediately suggest it; yet when the principle is grasped they are immediately susceptible of deductive explanation

In 1880 de Candolle published his *Phytographie.* This is a useful book, indispensable to the taxonomic workshop. It elaborates and enforces the admirable principles of plant descriptive work laid down by Linnæus, which make the study one of no small value as an educational discipline. The book will always have its value as keeping alive an admirable tradition.

Finally, in 1883, de Candolle published his "Origine des Plantes Cultivées." This sprang from his prefatory studies for the *Géographie.* It is an altogether admirable book; not perfect certainly, or complete, and faulty perhaps more especially in the difficult matter of handling the philological evidence.

De Candolle was a foreign member of the Royal Society of Great Britain, a gold medallist of the Linnean Society, a D.C.L. of Oxford, and an LL.D. of Cambridge; and the possessor of the order which perhaps confers the greatest distinction on a scientific man, the "*pour le mérite*" of Prussia.

The Chemistry of Ipecacuanha *

By Dr. B. H. Paul and A. J. Cownley.

Next to opium and cinchona bark, ipecacuanha is probably one of the most important drugs included in the official materia medica, but its chemical history is still very imperfect, and although some of its medicinal effects are ascribed to an alkaloid, there is considerable doubt whether that is always the case.

For several months past we have been engaged in the endeavor to devise a satisfactory method of extracting from ipecacuanha the alkaloid which has been regarded as the active principle of this drug, and to which the name of emetine has been applied; our object being to obtain such means of quantitative determination as could be relied upon when applied to the examination of different samples of the commercial drug or of its medicinal preparations. In prosecuting this inquiry reference has of course been made to the observations of previous experimenters; but instead of deriving much assistance from the published statements of their results, we have found that they lead to considerable uncertainty respecting the chemical identity of the substance. Thus, for instance, in the description of emetine given by Lefort,† it is stated to be very readily soluble in solutions of caustic soda or potash, and that in such solutions emetine rapidly undergoes alteration by absorbing oxygen from the atmosphere. We have found that this is not the case with the alkaloid supplied by Merck as pure emetine, or with that which we have ourselves obtained from ipecacuanha. Even on precipitating the base from solutions of its salts with caustic alkalies the precipitate formed is not dissolved again on adding an excess of caustic alkali. There are similar discrepancies between the statements as to the physical characters of the alkaloid of ipecacuanha. Most authorities describe it as being perfectly amorphous, some state that it is susceptible of crystallization, under certain conditions, while others again describe it, without any qualification, as having the form of "needles" ‡ or "crystals." § The statements as to the melting point of the alkaloid also differ considerably. In addition to these discordant statements, we have found, in experimenting with several samples of ipecacuanha, that the alkaloid is not homogeneous, but a mixture of two or more different substances.

Under these circumstances it appeared to be premature to attempt the determination of emetine, as a means of ascertaining the relative value of samples of ipecacuanha or of its medicinal preparations, and we have therefore directed our attention to the general chemical examination of the alkaloid constituents of the drug as a necessary preliminary to the endeavor to devise some practically applicable method of valuation. This inquiry is not yet sufficiently advanced for the publication of the results as a whole; but some points which have been made out are of sufficient interest to be worth mention in anticipation of a more complete account.

From the examination of a number of different samples of ipecacuanha we have ascertained that the alkaloid existing in this drug is for the most part a perfectly amorphous substance, of marked alkalinity, forming definite neutral salts which are also amorphous, and, like the base they contain, uncrystallizable by any means we have been able to apply. Hence it would appear that the want of a simple method of obtaining crystallized emetine is likely to remain a constant quantity, and that, in point of fact, the determination of emetine is at the present time only approximatively possible, inasmuch as the substance is unknown.

Further, we have found that this amorphous alkaloid is associated with others which are distinctly crystalline and very different from the amorphous alkaloid in physical characters. This fact we have established beyond doubt, and we are of opinion that it will serve to account for some of the discordant statements which have been made in regard to the alkaloid of ipecacuanha. Thus, for instance, it is stated by Kunz,* as well as Lefort and Wurtz,† and Podwysotzki,‡ that although the substance described by them as emetine was generally amorphous, they sometimes obtained the alkaloid in the form of distinctly crystalline needles, by rapid evaporation of an ether solution. On several occasions we have observed a similar formation of very delicate silky crystals when the ether solution of the alkaloid from ipecacuanha was left for some time. Sometimes the formation of these crystals took place in such a manner that the ether solution appeared to become quite solid; but on recrystallization from ether the apparently solid mass could be separated into an amorphous portion and a crystalline substance that was much less soluble and, in proportion as it was purified, was found to have a melting point of 90° to 98°C., which is very much higher than that given for emetine by any observer. Consequently the desideratum of crystallization, assumed to be necessary for the determination of emetine, would not, if it were attainable, suffice for that purpose, since other alkaloids are present which would still have to be separated in order to obtain definite results

The crystalline alkaloid above referred to is very much less soluble in ether, chloroform, or benzine than the amorphous alkaloid with which it is associated; but, as is usual in such cases, it is not until separation has been carried to some considerable extent that this difference becomes apparent. The quantity of material disposed of in the operations of fractional crystallization or precipitation, requisite for separating the alkaloids, is so great that very little remains for further examination unless larger quantities are operated with than we have yet had at our disposal.

The stem of Brazilian ipecacuanha appears to contain a small amount of the same amorphous alkaloid that is present in the root; but it is accompanied by a distinctly crystalline alkaloid. It is very sparingly soluble in ether, but separates from the solution on slow evaporation in lemon-yellow transparent crystals melting above 100° C. When precipitated from the solution of a salt by ammonia, it rapidly assumes a

* *The Pharmaceutical Journal and Transactions*, No. 1,304, p. 61.
† *Journal de Pharmacie* [4], ix., 244.
‡ Watts' 'Dictionary,' ii., 431.
§ Thorpe's 'Dictionary,' iii., 916.

* *Archiv. der Pharmacie* [3], xxv., 465.
† *Comptes rendus*, 84, 1300, and *Annales de Chim. Phys.* [5], xii., 281.
‡ *Pharmacent. Zeitschrift für Russland*, xix., 1.

crystalline form, and on addition of caustic soda it is dissolved in the manner stated by Lefort (see *supra*). It forms a neutral hydrochloride which is amorphous, and the platinum salt appears to be readily decomposed.

This alkaloid is present in very much larger proportions, relatively to the amorphous alkaloid, than it is in the root. Consequently it follows that determinations of the amount of alkaloid, as a whole, in the stem will not correctly express the relations of stem and root in regard to the amount of emetine. Evidently no inference can be drawn from such determinations as to the relative values of those portions of the plant as medicinal agents. Before that can be done with any degree of certainty it will be necessary to find means of separating the alkaloids so that their several amounts may be ascertained, and to do that a knowledge of their characters must be obtained. With that object in view we are now engaged in preparing such quantities of the several alkaloids of ipecacuanha as will admit of their chemical characters being studied, so as to furnish data for their separation and identification, besides furnishing material for ascertaining their respective therapeutic effects. Meanwhile, however, it must be pointed out that, apart from the absence of official recognition, there is no ground whatever for the assumption that ipecacuanha stems possess properties which justify their admixture with the roots. So far as anything is known it points in the opposite direction.

Another point to which attention is being directed is the question as to the relative value of other kinds of ipecacuanha, such as, for instance, that of New Granada, which is said to be probably derived from a plant different from that which yields Brazilian ipecacuanha. This Carthagena root is stated to be equal to, if not better than, the Brazilian at the present time.§ That opinion is based upon the amount of alkaloid that has been obtained from the Carthagena ipecacuanha, and in regard to that point we have found that there is little or no difference between the two kinds. It has been assumed that the alkaloid present in this root is the same as that contained in Brazilian ipecacuanha. There is no distinct chemical evidence that such is the case; but in the course of our experiments relating to this subject we have at least obtained evidence that Carthagena ipecacuanha contains, in addition to a considerable amount of amorphous alklaoid some proportion of another crystallizable alkaloid, which presents marked differences from the crystalline alkaloid of Brazilian ipecacuanha. Until the investigation of this material, in regard to the chemistry of its constituents and the therapeutic effects they produce, has been thoroughly carried out, and it shall have been shown that they are identical with those of the Brazilian drug, it would, however, be unjustifiable to advocate the substitution of the one for the other upon the ground of possible similarity of origin or of apparently analogous medicinal characters.

Before concluding it may be useful to refer to some of the opinions which have been expressed in regard to the striking absence of agreement between the data obtained in determinations of the alkaloid in ipecacuanha. Upon the basis of those data very dissimilar opinions have been expressed as to the amount of emetine in the drug. While some have taken one per cent. as the maximum, others have taken 1.6 as the minimum for a sample of good quality, and others again have insisted that nothing should be recognized as good which does not contain at least 2 5 per cent. Placing side by side with these differences the different experimental data obtained by various operators, which run through all possible gradations between one and upward of three per cent., it is evident either that ipecacuanha root is a very variable drug, or that the experimental results must have been largely influenced by accidental circumstances. The methods adopted by different operators are generally supposed to be chiefly accountable for the differences in the results obtained, and the facts we have already established as to the existence of distinct alkaloids, in regard to which some solvents exercise a differentiating action, will perhaps help to account for some of the differences between experimental results previously obtained.

There are, however, other conditions the probable influence of which upon the analytical results may be traced. It has been assumed that emetine is destroyed by the action of heat, and hence the recommendation of cold extraction and evaporation at low temperatures. We have not found either of these precautions to be essential or of importance. The solvents used for extraction or to be evaporated in concentrating solutions, generally resemble ether in being of such a nature that no excessive heating need be feared in either of those operations. It is rather in the operation of "shaking out" that loss of alkaloid is likely to be caused, not by its destruction, but as a consequence of particles of the precipitated alkaloid being melted and thus rendered practically insoluble. The fact that the alkaloid becomes almost insoluble after being melted has been pointed out by Kunz, and as its melting point is so low there is great risk of loss in this way if the precipitation is too rapidly carried out. The assumed decomposing action of alkalies has been spoken of as causing low results; but that explanation is inconsistent with the fact, mentioned by Kunz, that emetine offers remarkable resistance to the action of alkalies. Altogether we are disposed to think that in the determination of alkaloid in ipecacuanha differences in experimental results are not due to the nature of the solvent employed for extraction or to the method of operating. It seems much more probable that such differences arise from the want of preserving, throughout the entire treatment, conditions which are suited to the characters of the material operated upon and of the substance to be obtained from it. This appears to be of much greater importance than strict adherence to a mere rule of thumb procedure.

No.	Total Mixed Alkaloids. Root.	Stem.
1	2.02	—
2	1.95	—
3	2.14	—
4, picked	2.12	—
5, picked	—	0.97
6	2.08	—
7	2.03	—
8, picked	2.28	—
9, picked	—	1.76
10	2.22	—
11, picked	—	1.02
Mean	2.11	1.25

So far as we are in a position to form an opinion on the point above referred to, from the analytical examination of a comparatively small number of samples of ipecacuanha, we are inclined to the conclusion that the percentage amount of alkaloid in ipecacuanha root does not vary very much from 2 per cent., as shown by the results given in the foregoing table.

The picked samples consisted entirely of either root or stem respectively. The other samples of root were operated upon without separating any admixture of stem that might be present; but it was not in any case sufficient to affect the result very materially. Two of the samples of stem were carefully picked to separate any particles of root; but the other sample, No. 9, was found, after the analysis had been completed, to contain a considerable admixture of portions of root-bark, and that circumstance probably accounts for the higher amount of alkaloid obtained in that instance.

§ *Ph. J.* [3], xxiii., 267, and Keller, *Ph. J.* [3], xxiii., 595.

Medical Notes.

In Morphine Poisoning, tincture of capsicum, in ounce doses, has been used with success. It is used undiluted in enemata and repeated as often as necessary. Stretching of the sphincter ani by means of the bivalve speculum, as often as respiration flags, has also been practiced.—*North Carolina Medical Journal.*

For Tuberculosis.—Picot (*Deutsche med. Wochenschr.*, 1893, No. 30, p. 731) recommends a mixture of guaiacol and iodoform in sterilized olive oil for injection in the treatment of tuberculosis. Every cubic centimeter (16 minims) contains 0.01 (0.15 grain) of iodoform and 0.05 (0.75 grain) of guaiacol. The mixture is clear; its injection occasions no pain, is free from danger, and is reputed to have produced the same results as tuberculin and other agents.

Sulphate of Cinchonamine is a new antipyretic which is said to have some valuable properties. Le Gendre and Beaussenat have employed it in a number of cases of erysipelas, giving it by hypodermic injection in doses of four and one-half to nine grains. In some instances the effect upon the fever was superior to that obtained by any other antipyretic drug; but in others it was nil, and it was found necessary to resort to cold baths. In two cases the drug caused epileptiform convulsions, an effect which has also been observed in experiments with it upon animals.—*Medical Record.*

Acetic Ether is recommended by B. Krautwig (*Centralbl. f. Klin-Med.*) as a better stimulant than ether. It should be administered in doses of half a cubic centimeter subcutaneously, when it acts as well as camphor and better than ether itself. Acetic ether (*ethyl acetate*), so the author states, increases the respiration, the action of a dose not being evanescent, but reaching the height in from fifteen to thirty minutes and then gradually decreasing. A small dose of ether (0.8 c.c.) stimulates the respiration; a larger dose (1 c.c.) acts as a sedative; acetic ether, on the other hand, increases in stimulant action with the quantity given.

To Control Hay Fever.—A foreign scientist has observed that in the Winter a coryza was usually accompanied with hot ears, which regained their normal temperature when the discharge from the nose was established. He determined to try a reversed order of effect on the hay fever in the Summer, and began accordingly to rub his ears until they became red and hot.

It is now the third year that he has been able to lead an endurable existence during the hay fever season. As soon as the least sensation of fulness in the nose appears, there is recognized a certain amount of pallor in the ears. A thorough rubbing of the ears, at times, even to contusion, has always succeeded in freeing the nasal mucous membrane from its congestion. The rubbing, however, must be *thorough*, and repeated as often as the least symptom of congestion returns to the nose.

The Human Body Used as a Medicament.—The leaders of the late anti-foreign movement in China stirred up their emissaries to hatred of the foreign dwellers in their midst by various false accusations. Missionaries were charged with bewitching women and children, and murdering them for the sake of their hearts and eyes. According to Dr. Macgowan, who has lived in China for years, these charges are far from preposterous; for in that country various portions of the human frame are credited with therapeutic properties. In the only Chinese authoritative materia medica thirty-seven remedies of the kind are given. Human blood, taken into the system from another, is thought to strengthen it. Of course, this idea is not purely Chinese, as Western medicine has its transfusion of the blood of others as a last resource in extreme hemorrhage. But other Chinese remedies are not elsewhere recognized as efficacious. Thus, human muscles are supposed to be a good remedy in consumption, and children mutilate themselves to administer their flesh to sick parents. This treatment, too, is especially frequent among the *literati*. A graduate, finding "the snipping of the skin from his own arm too painful, seized a hatchet and cut off a joint of one of his fingers, which he made into broth mixed with medicine, and gave to his mother." The recipient must be kept in absolute ignorance of the potion thus prepared, while the operation is never performed for an inferior, as by a husband for a wife, or by a parent for a child. There is, consequently, a demand for portions of the human body, which command a certain price; and this fact tempts men to murder others that they may obtain the money which will be paid for the portions in question.—*Medical Record.*

Nitrate of Aconitine in Facial Erysipelas.—Tison (*Sem. Méd.*, August 25, 1893) was first induced to use this remedy in 1888, and has employed it subsequently in every case of facial erysipelas which has come under his treatment. The results have been highly satisfactory, pain and other symptoms having been rapidly subdued, save in two instances, and in neither of these could the complications which arose be due to the treatment. Although the nitrate of aconitine is highly poisonous, and it may be objected to by some on this account, if used as now suggested the danger of untoward symptoms is very slight. The alkaloid is dissolved in a mixture of glycerin, alcohol, and distilled water, the mixture having the same specific gravity as water and containing 1 milligramme in 50 minims. Only 2 to 4 milligrammes are required in any one case. The method of procedure is as follows: According to the condition of the stomach, either an emetic or a purgative is administered, immediately after which nitrate of aconitine is given in a mixture containing 1 milligramme for the twenty hours dosage. The affected part is painted with a saturated ethereal solution of camphor, which acts as an excellent sedative. When all signs of inflammation have subsided the part is washed with a solution of lysol.

Some New Reactions for Albumin in the Urine.

The chemical and microscopical examination of the urine has long been regarded as an important means of diagnosis, and affords indications not only as to the interesting anomalies of tissue metamorphosis,

but of the pathological affections of particular organs.

It is well recognized that clinical examination must proceed *pari passu* with the microscopic examination, especially when the question to be solved is the differential diagnosis between diseases of the kidney and other affections. Albuminuria is not necessarily significant of disease of the kidney, for we find albumin in the urine when the kidneys are perfectly healthy (febrile albuminuria), or when the albumin comes from some portion of the urinary tract (spurious albuminuria).

In every case clinical examination, rapidly executed, to demonstrate the presence of albumin is valuable; for if, on repeated examination of the urine, negative results are obtained, we may exclude disease of the kidney. It is advisable to frequently repeat the analysis as in different affections of the kidney (atrophic kidney, amyloid degeneration), the albumin may for a time disappear.

Dr. C. Zouchlos reports in a recent issue of *Le Progés Medical* the results of a series of experiments made by him in the clinical laboratory of Erlangen under the direction of Dr. Fleischer. Dr. Zouchlos confined his experiments to other reagents than those mentioned in M. Penzoldt's monograph "On the Old and New Tests for Albumen in the Urine and their Diagnostic Value."

Reaction of Sulphocyanide of Potassium and Acetic Acid at an Ordinary Temperature.—Take 100 c.c. of a ten per cent. solution of sulphocyanide of potassium and 20 c.c. of acetric acid, and add a few drops to the urine to be examined. If it contain the smallest quantity of albumin a distinct cloudiness is at once obtained; if the urine contain much albumin a thick white precipitate is obtained. Any excess of the reagent has no effect. All normal urines, that is to say, such as are not affected by ferrocyanide of potassium and acetic acid, give negative results with this reagent. By successive dilutions of urine containing albumin he found that this reaction is more delicate than ferrocyanide of potassium and acetic acid. It possesses the advantage of being colorless, so that the least cloudiness is more manifest than when ferrocyanide of potassium is employed. The reagent employed by him has remained transparent even when long kept. If the sulphocyanide of potassium and the acetic acid be evaporated together a hygroscopic powder is obtained which does not give the albumen reaction. The former method must therefore be followed. Succinic acid may be substituted for the acetic acid. If to albuminous urine sulphocyanide of potassium and a little succinic acid be added a distinct cloudiness is obtained, while normal urine remains clear. He has been able to assure himself by a long series of experiments of the accuracy of this test.

This reaction possesses the advantage of being easily carried about, the sulphocyanide of potassium and the succinic acid being solid. If these reagents be mixed in equal proportions, and a small portion of the mixture be added to albuminous urine, an immediate cloudiness results with the smallest quantity of albumen. Normal urine gives a negative result. If the pulverized mixture be inclosed in gelatin capsules and the air be excluded the reaction may be instantly obtained. (*a*) If exposed to the air the powder becomes humid. He is, therefore, of opinion that sulphocyanide of potassium and succinic acid is an admirable albumin test, and may in this form be conveniently carried about.

In the first place he evaporated in a water-bath at a medium temperature ferrocyanide of potassium and acetic acid. A powder is thus obtained which is hygroscopic and consequently cannot be employed. Finally, he made a mixture of ferrocyanide of potassium and acetic acid, and employed this solution as an albumin test, thus dispensing with the necessity of employing the two reagents separately. This solution did not prove advantageous, for it became green and opalescent and simulated the presence of small quantities of albumen in the urine. On the other hand we know that perchloride of mercury combined with acids precipitates albumin, and this fact led him to other experiments.

Reaction of Albumin with Perchloride of Mercury and Acetic Acid.—If a few drops of a ten per cent. solution of perchloride of mercury be added to albuminous urine a distinct cloudiness is obtained, while in normal urine the cloudiness is hardly visible, except in very exceptional cases. If to the urine so rendered cloudy by perchloride of mercury a few drops of acetic acid be added the precipitate disappears if it is not composed of albumin. On the contrary if the urine contain albumin, the precipitate persists. A mixture of one part of acetic acid and a ten per cent. solution of perchloride causes only a cloudiness when there is albumin in the urine; this appears immediately on the addition of the reagents and does not form a deposit, while the addition of the sublimate alone causes one. Peptones give no reaction with these agents in the proportions above indicated. The same applies to uric acid, urea, phosphates, and sugar. Further, very concentrated urine does not become cloudy on the addition of the sublimate and acetic acid.

Neuralgia.*

By a West-end Physician.

Now that the neuralgia season is again at hand, it may be worth while to review some questions relating to the nature and causes of that most troublesome complaint, and at the same time to take into consideration the best means of relieving it.

THE SYMPTOM OF NEURALGIA.

Unlike the majority of diseases, neuralgia has only one symptom, but for most people that one is quite enough. Milton must surely have had it in his mind, if not in his nerves, when he wrote—

> But pain is perfect misery, the worst
> Of evils, and, excessive, overturns
> All patience.

Needless to say, every pain is not a neuralgia, and, indeed the pain of neuralgia is altogether peculiar—a pain *sui generis*. It is quite unlike the dull throbbing pain of inflammation or the depressing sickening pain of severe colic, or in short, any other of the many pains to which poor human flesh is heir. It is described by those who ought to know as sharp and piercing, and sometimes so agonizingly severe as to force an involuntary cry from the sufferer. Often it seems to shoot or flash from one point to another, and people who have studied their anatomy can easily distinguish that it follows the course of some nerve or nerves. The pain comes and goes; rising rapidly to its severest intensity and again as rapidly subsiding. The attacks may last from a few minutes to many hours, and after they pass off the patient is left with an inexpressible sense of utter weariness. The skin over the part is generally exquisitely tender for some time, and if it is the scalp that has been affected patches of the hair may turn white or even fall off. Such, then, shortly, are the chief characters of the disease, and we may now turn to

*From *The Chemist and Druggist.*

THE CAUSES OF NEURALGIA.

Neuralgia, it is said, is the first indication of an enfeebled nervous system, and that, in turn, may be due to very varied conditions, such as overwork, worry, dyspepsia, and so forth. These all bring about pretty much the same result. The body as a whole becomes depressed and badly nourished, and the nervous system is the first to suffer. It is upon it in most of us that the greatest strain of daily life must fall, and, in consequence, it is the first to show signs of breakdown. Now, we are taught by clinical experience and by scientific experiment alike, that the primary change produced by weakening nerve-structures is an undue sensitiveness or irritability, and in this we have a clue to the cause of neuralgic pains. So long as the nerves are up to standard strength, so long they may bid defiance to all ordinary irritation. But when they fall below that standard there is a different story to tell, and a mere trifle, even the slightest draught, sets them tingling with pain. Thus it is that the advent of Winter, with its cold, its damp, its fogs, its gas-lit rooms, and its increased business-pressure, is also the advent of the neuralgia season. So much for the common causes of ordinary neuralgia, but there remain a certain number of cases that depend on an entirely different class of conditions—upon what is called "local irritation," such as decayed teeth, overstrained eyes, and the like.

THE NATURE OF NEURALGIA.

The exact nature of neuralgia has yet to be found out, but there can be no doubt that it is some alteration in the nerve tracts. One circumstance there is that is very suggestive. The neuralgic subject is typically a thin subject. There are, of course, exceptions to every rule, and there are to this. Neuralgia does occur in fairly stout people, but very rarely, and when it does we believe it can generally be traced to some form of "local irritation." The striking fact remains that nearly all who suffer from the disease are very insufficiently supplied with fat, and fat is one of the most important elements in the structure of nerves. A nerve-fiber consists of two essential parts—the axis-cylinder and its sheath. The axis-cylinder is a long wire-like structure continuous throughout the whole length of the nerve—say, from the toes right up to the brain. It is the active, sensitive, feeling part, and it is along it that the nerve messages are flashed. The sheath, or "white substance of Schwann," is a thick fatty envelope wrapped around the axis cylinder in sections and comparable in its nature to the protective insulating covering of a telegraph wire. Now, when the fats of the body generally are deficient it follows almost of necessity that this fatty envelope of the nerves will be deficient also. In other words, the sensitive axis cylinders will be deprived of their normal protective covering and left exposed to the sweet mercies of colds and draughts. It is very significant in connection with this that neuralgias do increase with the onset of the cold weather, and that they affect chiefly the face and head—the parts uncovered by protecting clothes. Perhaps even more significant still is the fact that, on the whole, the most reliable and efficient remedy for neuralgia is cod-liver oil.

THE TREATMENT OF NEURALGIA.

In treating neuralgia the pain has to be relieved and the disease has to be cured. These are by no means the same, and it is very important to bear this fact clearly in mind. The pain must be relieved as speedily as possible, and this is accomplished by the use of various nervine sedatives. Such sedatives are, however, only temporary expedients. They have no effect in preventing a return ot the disease, and, indeed, if injudiciously used, they may have exactly the opposite effect. Before, then, passing on to them it would be well to consider the really more important question of

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Put shortly, this is the correction of the causes of the neuralgia. The body generally, and the nervous system in particular, must be brought up to the proper standard of vitality. For this purpose tonics, such as iron, arsenic, and strychnine, will be found valuable. The diet should be light, but nourishing, and always taken at regular hours. Plenty of sleep, fresh air, and out-of-door exercise should be insisted upon. Lastly, cod liver oil, or some preparation of it, ought to be given, and its use continued for a considerable period.

Of course, any morbid condition, such as dyspepsia or constipation, should be energetically treated, and when there is any source of local irritation it must be removed at once, if possible.

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Many drugs have been vaunted from time to time as positive cures for the pains of neuralgia. As a matter of fact, however, there is no one remedy that is absolutely certain in its results. What has been found excellent in one case will often be quite useless in another and apparently precisely similar one. The obvious deduction, then, is not to be discouraged when, after a fair trial, one remedy has failed, but simply to proceed to give another. Among the external applications, belladonna, aconite, and menthol are the most reliable, and as examples of internal remedies that will be likely to succeed we append a few formulæ which we have found from practical experience to be useful :

(1)

Ammonii chloridi	℥ iij
Tinct. gelsemii	℥ ij
Ext. glycyrrhiz. liq	℥ ss
Aq. chloroformi ad	℥ vj

Misce et filtra.

Sig.: One tablespoonful every four hours till the pain is relieved.

(2)

Butyl-chloral hyd	℥ j
Ext. cocæ liq. (miscibie)	℥ vj
Glycerini	℥ ij
Tinct. aurantii	℥ ij
Aq. ad	℥ vj

M.

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Tinct. cascarii	℥ ss
Tinct. card. co	℥ ss
Glycerini	℥ ss
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Misce bene et divide in partes duodecim.

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Tyrotoxicon—J. E. G., Three Rivers, Mich.—In the text books tyrotoxicon is vaguely referred to as a diamine compound having the chemical formula $C_6H_8N_2$. The uncertainty regarding its chemical properties does not, however, extend to a knowledge of its physiological effects, for Professor Vaughan has, by carefully conducted experiments, fully demonstrated its poisonous action on man and the lower animals. It is the mystery attending its production in preparations of milk and cream together with the uncertainty regarding its presence there at all that puzzles medical men and chemists. When present in ice cream it is thought by some medical men to be produced by electrolytic decomposition of the mixture, the freezer acting as an electric battery and the mixture an electrolyte; but this is surely a case of carrying theory to its extremest limits.

Ingluvin.—J. M. M., Brooklyn.—By the makers ingluvin is claimed to be a pepsin prepared from the gizzard of birds, but this is questioned in some quarters, one experimenter having declared the substance to be nothing more than a mixture of pepsin and common salt. We have never examined the article and are consequently unable to express an opinion.

Bock Beer Essence.—J. H., St. Louis.—This is a flavoring compound used by some brewers to give a heavy flavor to beer. The following is said to fairly represent it:

Tincture of lupulin	1 part
Pyroligneous acid	2 parts
Alcohol	8 parts

Mix.

Ruppert's Face Bleach.—A. D., Madison.—Recent analyses of this article have resulted in the suggestion of the following formula:

Corrosive sublimate	7½ grains
Tincture of benzoin	1 drachm
Rose water enough to make	8 ounces

Mix.

Nubian Blacking.—J. H., New York.—The formula specified in the English patent reads as follows:

Camphor	11 parts
Venice turpentine	16 parts
Shellac	36 parts
Aniline blue	15 parts
Bismarck brown	15 parts
Alcohol	926 parts

Dissolve.

Armenian Paper. T. C. O., Chicago, Ill.—Ordinary unsized paper is soaked in a solution prepared as follows:

Gum benzoin	℥ vi
Gum myrrh	gr. xxxvj
Orris in coarse powder	℥ iss
Musk	℥ ss
Otto of rose	Mij
Alcohol	℥ iv

Macerate for a day, then percolate to make 3 oz.

Salyx Compound. S. C. S., Lindsey, O.—The sample which you send is composed of salicylic acid, and does not, on a cursory examination, seem to contain any admixture. The therapeutic action of salicylic acid is very fully described in Hare's "Practical Therapeutics," 3d edition, p. 293.

Hair Tonics. F. S. West, Hoboken, N. J.—Numerous recipes for hair tonics have been published from time to time in these pages. We are indebted to the "Manual of Formulæ" for a few of the formulas given below:

Bay Rum Tonic.

Bay rum	100 ounces
Glycerin	16 ounces
Tincture of cantharides	8 ounces
Tincture of quillaja	8 ounces
Rose water	8 ounces
Orange flower water	8 ounces

Mix and filter, if necessary.

Stimulant Wash.

Essence of lemon	1 drachm
Tincture of cantharides	2 drachms
Oil of almonds	1 ounce
Liquid ammonia	1 ounce
Spirit of rosemary	8 ounces

Mix. "Shake the bottle."

Astringent Lotion.

Oil of lemon	1 drachm
Oil of bergamot	1 drachm
Tannic acid	5 drachms
Castor oil	3 ounces
Alcohol	18 ounces

Mix.

To be rubbed into the roots of the hair daily.

Erasmus Wilson's Hair Wash.

Oil of rosemary	1 drachm
Oil of lavender	1 drachm
Tincture of cantharides	1½ ounces
Eau de cologne	12 ounces

Mix.

Flash Test for Oils. J. C N., New York City.—The method of conducting this test is very simple. The oilcontained in an open porcelain basin or other vessel capable of accommodating a thermometer is heated on a sand bath, while a burning match or taper with the smallest possible flame is held above the oil but not allowed to touch it. The temperature of the oil is accurately observed, and its flash point determined by the temperature at which the vapor ignites. Oil, the vapor of which flashes before the mercury rises to one hundred and thirty degrees, is dangerous to use in lamps designed for household use. Several forms of special apparatus have been devised for applying the flash test, and where much work of this sort is done it is advisable to procure a set of the apparatus. It consists essentially of a small lamp for heating and a specially constructed copper dish mounted on a stand, and, of course, accompanied by a thermometer.

Chicle Gum.—N. & B.—Chicle is the dried milky juice of the *Sapota Müelleri*. It is also obtained from other trees of undetermined species indigenous to Central South America. In this market chicle is found as tough and very flexible elastic pieces of a grayish-red color having an odor like that of guttapercha which it resembles and for which it is often substituted. It is soluble in benzine, in warm oil of turpentine and in carbon disulphide and melts at, 45° C. In the New York market the substance is handled in a large way by a few dealers only, though the jobbing trade can supply small quantities. Reference to our wholesale prices current will show its present cost from the hands of importers in cargo lots.

The commercial gum requires careful treatment before it can be made fit for chewing purposes. It is placed in a boiler with sufficient water to completely cover it; the water is then raised to the boiling point and maintained at this heat until all particles of dirt and foreign substances have separated; the lighter impurities will float on the surface, while the heavier

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Tyrotoxicon—J. E. G., Three Rivers, Mich.—In the text books tyrotoxicon is vaguely referred to as a diamine compound having the chemical formula $C_6H_8N_2$. The uncertainty regarding its chemical properties does not, however, extend to a knowledge of its physiological effects, for Professor Vaughan has, by carefully conducted experiments, fully demonstrated its poisonous action on man and the lower animals. It is the mystery attending its production in preparations of milk and cream together with the uncertainty regarding its presence there at all that puzzles medical men and chemists. When present in ice cream it is thought by some medical men to be produced by electrolytic decomposition of the mixture, the freezer acting as an electric battery and the mixture an electrolyte; but this is surely a case of carrying theory to its extremest limits.

Ingluvin.—J. M. M., Brooklyn.—By the makers ingluvin is claimed to be a pepsin prepared from the gizzard of birds, but this is questioned in some quarters, one experimenter having declared the substance to be nothing more than a mixture of pepsin and common salt. We have never examined the article and are consequently unable to express an opinion.

Bock Beer Essence.—J. H., St. Louis.—This is a flavoring compound used by some brewers to give a heavy flavor to beer. The following is said to fairly represent it:

Tincture of lupulin	1 part
Pyroligneous acid	2 parts
Alcohol	8 parts

Mix.

Ruppert's Face Bleach.—A. D., Madison.—Recent analyses of this article have resulted in the suggestion of the following formula:

Corrosive sublimate	7½ grains
Tincture of benzoin	1 drachm
Rose water enough to make	8 ounces

Mix.

Nubian Blacking.—J. H., New York.—The formula specified in the English patent reads as follows:

Camphor	11 parts
Venice turpentine	16 parts
Shellac	36 parts
Aniline blue	15 parts
Bismarck brown	15 parts
Alcohol	926 parts

Dissolve.

Armenian Paper. T. C. O., Chicago, Ill.—Ordinary unsized paper is soaked in a solution prepared as follows:

Gum benzoin	℥ vi
Gum myrrh	gr. xxxvj
Orris in coarse powder	℥ iss
Musk	℥ ss
Otto of rose	Miij
Alcohol	℥ iv

Macerate for a day, then percolate to make 3 oz.

Salyx Compound. S. C. S., Lindsey, O.—The sample which you send is composed of salicylic acid, and does not, on a cursory examination, seem to contain any admixture. The therapeutic action of salicylic acid is very fully described in Hare's "Practical Therapeutics," 3d edition, p. 293.

Hair Tonics. F. S. West, Hoboken, N. J.—Numerous recipes for hair tonics have been published from time to time in these pages. We are indebted to the "Manual of Formulæ" for a few of the formulas given below:

Bay Rum Tonic.

Bay rum	100 ounces
Glycerin	16 ounces
Tincture of cantharides	8 ounces
Tincture of quillaja	8 ounces
Rose water	8 ounces
Orange flower water	8 ounces

Mix and filter, if necessary.

Stimulant Wash.

Essence of lemon	1 drachm
Tincture of cantharides	2 drachms
Oil of almonds	1 ounce
Liquid ammonia	1 ounce
Spirit of rosemary	8 ounces

Mix. "Shake the bottle."

Astringent Lotion.

Oil of lemon	1 drachm
Oil of bergamot	1 drachm
Tannic acid	5 drachms
Castor oil	3 ounces
Alcohol	18 ounces

Mix.

To be rubbed into the roots of the hair daily.

Erasmus Wilson's Hair Wash.

Oil of rosemary	1 drachm
Oil of lavender	1 drachm
Tincture of cantharides	1½ ounces
Eau de cologne	12 ounces

Mix.

Flash Test for Oils. J. C N., New York City.—The method of conducting this test is very simple. The oil contained in an open porcelain basin or other vessel capable of accommodating a thermometer is heated on a sand bath, while a burning match or taper with the smallest possible flame is held above the oil but not allowed to touch it. The temperature of the oil is accurately observed, and its flash point determined by the temperature at which the vapor ignites. Oil, the vapor of which flashes before the mercury rises to one hundred and thirty degrees, is dangerous to use in lamps designed for household use. Several forms of special apparatus have been devised for applying the flash test, and where much work of this sort is done it is advisable to procure a set of the apparatus. It consists essentially of a small lamp for heating and a specially constructed copper dish mounted on a stand, and, of course, accompanied by a thermometer.

Chicle Gum.—N. & B.—Chicle is the dried milky juice of the *Sapota Mülleri*. It is also obtained from other trees of undetermined species indigenous to Central South America. In this market chicle is found as tough and very flexible elastic pieces of a grayish-red color having an odor like that of guttapercha which it resembles and for which it is often substituted. It is soluble in benzine, in warm oil of turpentine and in carbon disulphide and melts at, 45° C. In the New York market the substance is handled in a large way by a few dealers only, though the jobbing trade can supply small quantities. Reference to our wholesale prices current will show its present cost from the hands of importers in cargo lots.

The commercial gum requires careful treatment before it can be made fit for chewing purposes. It is placed in a boiler with sufficient water to completely cover it; the water is then raised to the boiling point and maintained at this heat until all particles of dirt and foreign substances have separated; the lighter impurities will float on the surface, while the heavier

will fall to the bottom. After a process of skimming the gum is removed from the water and while still in a semi solid state is flavored with the usual ingredients by careful manipulation and heating. When completed the gum is poured into molds, afterwards broken into cubes and squares of suitable size.

Cheap Liniment.—S. F. K., Philadelphia.—We know of nothing better for the production of a cheap liniment than the formula given below; it has the advantage of furnishing a liniment adapted for almost any indication calling for a stimulating application to an unbroken surface:

Powdered capsicum	℥i
Oil of camphor	℥iiss
Oil of turpentine	℥xvi

Let stand for seven days and filter, beat the filtrate with contents of three eggs—albumen and yolk—until they are thoroughly mixed; then add:

Acetic acid	℥iiss
Water	℥xvi

This costs about $1.25 a gallon and should be retailed in 2 oz. panels bearing an appropriate label.

Questions in Dispute.—S. A., New York.—"To settle a dispute kindly answer the following:

"Will quicksilver evaporate under ordinary conditions, *i.e.*, conditions not brought about by chemicals, the action of heat or cold?"

It is within the bounds of reasonable speculation to suppose a gradual evaporation to take place when mercury is exposed to the air. But what is more likely to happen is oxidation, which would contribute to increase rather than to diminish its bulk.

"If illuminating gas is allowed to come into contact with quicksilver in its passage through a pressure device to the burner, will the gas be likely to absorb any of the quicksilver, and thereby create a compound injurious to health?"

It is most unlikely. For a more complete answer to this query we must refer you to any elementary textbook on chemistry.

Blue Ointment—W. E. M., Newark, asks for a formula for making blue ointment which he says appeared in an earlier number of this journal.

We do not recall ever having published a formula for this ointment which differed in any essential particular from the formula official in the 6th edition of the U. S. Pharmacopœia. The formula now official produces quickly and without much labor an ointment of satisfactory consistence and appearance. The improvement in the formula of the 7th edition consists in first extinguishing the mercury in the oleate of that metal and adding to the finely divided mixture the necessary amounts of lard and suet previously melted together and partially cooled The whole is triturated until globules of mercury are no longer visible under a lens magnifying ten diameters.

Sal Volatile.—From the same correspondent we also get a request for information as to the composition of the article known to German and British customers as "Sal Volatile."

This is a synonym for Aromatic Spirit of Ammonia, and the latter is always dispensed in Europe when the former is called for though in America ammonium carbonate is generally dispensed.

Root Beer Extract.—W. E. M.—Try the following:

Root Beer Extract.

Sarsaparilla	5 pounds
Spikenard	2 pounds
Wintergreen	1 pound
Birch bark	1 pound
Sassafras bark	1 pound
Wild cherry	8 ounces
Prickly ash	1 pound
Jamaica ginger	4 ounces
Nutmeg	4 ounces

Reduce the drugs to coarse powder; moisten with diluted alcohol and transfer to a percolator of suitable capacity, and percolate with a mixture of 2 parts of water to 1 part of alcohol until the drugs are exhausted.

Root Beer Syrup is made by adding one ounce of the extract to each 31 ounces of simple syrup.

Bibliography.

REACTIONS. A selection of organic chemical preparations important to pharmacy in regard to their behavior to commonly used reagents. By F. A. Flückiger, Ph.D., M.D. Translated, revised and enlarged by J. B. Nagelvoort, analytical chemist in the pharmaceutico-chemical laboratory of Parke, Davis & Co., Detroit: George S. Davis, 1893.

As its title indicates this is an English translation of Flückiger's well-known "Reactionen," a work which presents in brief but comprehensive form a large amount of practical information on the identity reactions of different organic chemical preparations. 109 compounds in all are described in the treatise, and these range from acetanilid to veratrin, and include several of the more recently introduced synthetical compounds as: Aristol, Diuretin, Europhen, Exalgin, Iodol, Phenacetin, Phenocoll hydrochloride, Piperazine, Saccharin, Salol, Salophen, Sulphonal.

From the view-point of the pharmaceutical chemist the work is all that could be desired, presenting as it does within the compass of some 154 pages an amount of valuable information, not otherwise obtainable, except through laborious search through the different journals of chemistry and pharmacy. The detailed processes for estimating the purity of the different chemicals enumerated in its pages, though brief, are described with great clearness and should prove easy of comprehension even to those who are unfamiliar with the work.

We cannot compliment the author on his premature adoption of the rules of the chemical section of the American Association for the Advancement of Science (*Pharmaceutical Record*, 1892, p. 410) with regard to the nomenclature of chemical compounds. It would have been more advisable in the present work to have followed the wise lead of the Committee on Revision of the U. S. Pharmacopœia, and delayed the innovation until the new rules had received more general acceptance. The peculiar orthography of the translator is apparent in many places throughout the work, and will prove a little annoying to American students accustomed to more precision in these matters. The frequent use of heavy faced and italic type, so dear to the heart of the German journalist, is also a disagreeable feature and we trust will be amended in future editions of the work.

The publishers have done their work well, the volume being printed on paper of excellent quality and bound in covers of most attractive red, the bright appearance of which is suitably complemented by the deep black letters of the title.

MANUAL OF BACTERIOLOGY FOR PRACTITIONERS AND STUDENTS, WITH ESPECIAL REFERENCE TO PRACTICAL METHODS. By DR. S. L. SCHENK; Translated from the German (by the author's permission), with an Appendix, by W. R. Dawson, B.A., M.D., Univ. Dubl.; with 100 Illustrations, partly colored. London: Longmans, Green & Co., 1893.

This book is an English edition rather than a mere translation of Professor Schenk's "Grundriss der

Bakteriologie," which made its appearance not long since in Germany, both the translator and Dr. Schenk himself having contributed additional data.

The work is designed with a view to combining practical and theoretical instruction serving as a text book in the classroom and as a guide in the laboratory, and the design seems well carried out.

The first chapter gives a brief and excellent introduction to the subject matter in the way of a disquisition on the morphology and biology of micro-organisms in general.

The next two chapters are devoted to a description of the apparatus and reagents used in bacteriological investigations.

Then follows the description in detail of the methods of making these investigations. The bacteriological examinations of air, water, earth and decaying matter are then taken up, the pathogenic micro-organisms being given special study, and the remainder of the book is devoted to a study of the micro organisms present in different portions of the body.

The work is well illustrated, is thoroughly abreast of the times, and will prove a valuable one.

A TEXT-BOOK OF PRACTICAL THERAPEUTICS, with Especial Reference to the Application of Remedial Measures to Disease and their Employment upon a Rational Basis. By Hobart Amory Hare, M.D., B.Sc., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia; Laureate of the Royal Academy of Medicine in Belgium, of the Medical Society of London, etc,; President of the Section of Therapeutics in the Pan American Medical Congress. Third Edition. Enlarged and Thoroughly Revised. Cloth, $3.75; leather, $4.75. Philadelphia, Lea Brothers & Co., 1892.

The most convincing evidence of the worth or permanent value of a book is to be found in the demand which exists for it. Judged by this standard, Professor Hare's excellent manual of therapeutics will take a very prominent position among books of its kind; for it has found such complete favor with physicians and students of medicine as to require the printing of three large editions within a period covered by two years.

Of the portions of the work dealing with the pharmacology of drugs (with which we are chiefly concerned), those devoted to descriptions of the active principles contained in drugs of vegetable origin; the physiological action of poisons antidotes, and the administration of remedies will chiefly interest the pharmaceutical reader. Here he will find arranged, in most convenient alphabetical order, descriptions or rather summaries of the most prominent characteristics of all of the drugs and preparations recognized in the pharmacopœias of both this country and Great Britain, together with many remedies which have not yet found a place in either work, but which are used more or less by the clinicians of each country. Though many of the newer remedials enumerated in the work under review have since found a place in the seventh edition of the U. S Pharmacopœia, sufficient of the comparatively untried or recent remedies find mention to leave the volume a most useful compendium of the pharmacology of the newer *materia medica*. Thus directions are given for the administration and application of many of the more recently introduced organic compounds and other remedies—salophen, guaiacol, diuretin, europhen, thiol, phenocoll hydrochloride, piperazine, dermatol, pental, terpin hydrate, terpinol and the salts of strontium being among the number.

The practical character of the treatise is noticeable throughout, but is especially borne in upon one when obliged to consult its comprehensive indexes of drugs and diseases; these are among the most suggestive and ready reference guides to the contents of a book that have come under our observation in recent years, and form a most noteworthy feature of a truly valuable text-book of practical therapeutics.

Taken altogether it is not too much to say that it is one of the most valuable of the smaller works on the therapy of drugs in the English language; and we would earnestly advise every student of medicine and of pharmacy to possess himself of a copy.

Formulaire des Nouveaux Remèdes, Par Dr. G. Bardet. Septiéme Edition, Paris, Octave Doin, 8 Place de L'Odion: 1893.

This work is divided into four parts, the first of which consists of a review of new remedies. In this the articles are taken up alphabetically, the chemistry, or natural history, therapeutics and posology of each being briefly treated, so as to embrace all the essential facts concerning each article. This occupies some 242 pages.

In the second part are found numerous formulas for the administration of the newer materia medica, all of which are grouped alphabetically, under their therapeutic uses, as anesthetics, anthelmintics, antiseptics, etc. This occupies 72 pages of the book.

The third part of the volume comprises a collection of miscellaneous formulas filling some ten pages. Then follow tables of the approximate equivalents of the contents of cups and glasses, the weight and size of drops, and the number of drops of various substances contained in one gramme.

The concluding portion of the work is devoted to a list of new remedies, giving a very concise description of the physical and therapeutic properties and posology of each. This latter list will prove of value to the pharmacist, giving within a brief compass (55 pages) all the information which it is essential for him to have concerning the medicaments named.

ANALYSIS OF MILK AND MILK PRODUCTS. By Henry Leffmann, M.D., Ph.D., Professor of Chemistry in the Woman's Medical College of Pennsylvania, etc., and William Beam, M.A., M.D., Philadelphia: P. Blakiston, Son & Co., 1893. 12mo, 92 pp., $1.

Drs. Leffmann and Beam in "Analysis of Milk and Milk Products" sustain their reputation as authorities on the methods of examining milk and other food products for the detection of impurities and sophistications.

We cannot do better than recommend every one interested in the analysis of milk, butter and cheese to obtain a copy of this book; it is the best treatise on the subject which has yet appeared, and no one pretending to skill in the ordinary analytical work of professional chemists can afford to be without it.

HOW TO JUDGE A HORSE, by Captain F. W. Bach, 12mo cloth, fully illustrated, $1.00. New York, W. R. Jenkins, 851 Sixth avenue.

Everybody loves a horse. Everybody ought to study its conformation. Ever purchaser knows by experience how difficult it is to arrive at correct conclusions as to its soundness and qualities.

Unlike many valuable books on the exterior of the horse, this little treatise has the advantage of great conciseness in pointing out, in few pages, the most important guiding points for the judging, and some points on methods of training young or obstinate horses are added, as it may become necessary for the owner to break in his young stock himself or correct those having formed bad or dangerous habits, especially

if living in the country with nobody near capable of handling young or obstinate horses.

A few remarks, concerning how to handle the reins properly in driving, may be of interest to some of the readers. Also bits and bitting, saddles and saddling, and stable drainage are considered.

All horse owners or persons intending to purchase a horse should read this work.

A New Illustrated Dictionary of Medicine, Biology, and Collateral Sciences.

Dr. George M. Gould, already well known as the editor of two small medical dictionaries, has now about ready an unabridged, exhaustive work of the same class, upon which he and a corps of able assistants have been uninterruptedly engaged for several years.

The feature that will attract immediate attention is the large number of fine illustrations that have been included, many of which—as, for instance, the series of over fifty of the bacteria—have been drawn and engraved especially for the work. Every scientific-minded physician will also be glad to have defined several thousand commonly used terms in biology, chemistry, etc.

The chief point, however, upon which the editor relies for the success of his book is the unique epitomization of old and new knowledge. It contains a far larger number of words than any other one volume medical lexicon. It is a new book, not a revision of the older volume. The pronunciation, etymology, definition, illustration, and logical groupings of each word are given. There has never been such a gathering of new words from the living literature of the day. It is especially rich in tabular matter, a method of presentation that focuses, as it were, a whole subject so as to be understood at a glance.

The latest method of spelling certain terms, as adopted by various scientific bodies and authorities, have all been included, as well as those words classed as obsolete by some editors, but still used largely in the literature of to-day, and the omission of which in any work aiming to be complete would make it unreliable as an exhaustive work of reference.

The publishers announce that, notwithstanding the large outlay necessary to its production on such an elaborate plan, the price will be no higher than that of the usual medical text book.

BOOKS AND PAMPHLETS RECEIVED.

Eleventh Annual Report of the State Board of Pharmacy of Illinois with an Abstract of Registered Pharmacists and Registered Assistant Pharmacists for the year 1892.

The Profession of Medicine as Sketched from the Outside and the Inside. By S. W. Kelley, M.D. Reprinted from the *Cleveland Medical Gazette.*

Nostrums for Increasing the Yield of Butter. By Harvey A. Wiley, Chemist of the U. S. Department of Agriculture.

Seventh Annual Report of the Virginia Board of Pharmacy.

Proceedings of the Illinois Pharmaceutical Association at the Thirteenth Annual Meeting held at Springfield, June 7 and 8, 1892.

Archives of the Cincinnati College of Medicine and Surgery, Vol. I. Reprinted from the *Cincinnati Medical Journal*

College Announcements.

Department of Pharmacy of the Scio College.

Pittsburgh College of Pharmacy.

Department of Pharmacy of the Ohio Normal University.

Oregon College of Pharmacy's Department of Pharmacy, Willamette University.

National College of Pharmacy.

The Brooklyn College of Pharmacy.—Third annual announcement, session of 1893-'94, College Building, 399 Classon avenue, near Green avenue, Brooklyn, N. Y.

A few striking changes have been made in the new prospectus of the Brooklyn College, and these it is believed are in the nature of improvements. The synopses of the different courses are very clearly mapped out and should prove serviceable to students, while the syllabuses of lectures convey a clear idea as to the progress likely to be made during the college year.

Miscellaneous Formulas.

Formulas for Phenosalyl.

PHENOSALYL PENCIL.

Phenosalyl	gr. xv
Gum arabic	gr. xxx
Flour	ʒv
Glycerin and water	q. s.

VAGINAL CAPSULES.

Glycerin	℥ij ℥ij
Water	℥ vj
Gelatin	ʒ iiss
Phenosalyl	gr. xv

Divided into 20-gramme capsules.

GARGLE.

Phenosalyl	gr. lxxv
Glycerin	f ℥ vj
Spts. mint	f ℥ iiss
Water	f ℥ xiv

Gargle every half hour.

SYRUP OF PHENOSALYL.

Phenosalyl	gr. viij
Spts. mint	ʒ iij
Syrup	f ℥ viij

Dessertspoonful to tablespoonful four times a day; children, one half to one teaspoonful.—P. Grou, *Le Progrès Médical.—Med. Bulletin.*

COLD VARNISH FOR PHOTOGRAPHIC NEGATIVES.

[Valenta *Bayr. Ind. u. Gewerbe-Bl.*]

I.	Sandarac	18 grammes
	Alcohol	100 cubic centimeters
	Lavender oil	1 cubic centimeter
II.	Spirit of ammonia (with absolute alcohol)	100 cubic centimeters
	Shellac	8 to 14 grammes
	or add ammonia water to a solution of shellac in absolute alcohol.	
III.	Angola copal	30 grammes
	Amber scraps	5 grammes
	Ether	300 cubic centimeters
	Acetone	200 cubic centimeters
	Chloroform	10 cubic centimeters

Dissolve either by allowing to stand a long time or by the aid of heat in a back flow condenser.

IV.	Dammar	8 grammes
	Alcohol	10 cubic centimeters
	Benzol	900 cubic centimeters
V.	Pyroxylon	150 grammes
	Acetone	1000 cubic centimeters
	Amyl acetate	2000 cubic centimeters
	Benzol	2000 cubic centimeters
VI.	Sandarac	100 grammes
	Benzol	400 cubic centimeters
	Acetone	400 cubic centimeters
	Absolute alcohol	200 cubic centimeters

Dissolve by aid of a water bath.

The ordinary negative varnish does not operate satisfactorily without slightly warming the plates to which it is applied. It is claimed for the above that they yield satisfactory results when applied cold.

SODA WATER SYRUPS.

COFFEE SYRUP.

Mocha coffee	6 ounces
Java coffee	8 ounces
Gelatin	¼ ounce
Sugar	6 pounds

Boiling water enough to make one gallon.

On the finely ground coffee packed loosely in a tin percolator pour one pint of boiling hot water; allow to macerate a few minutes then percolate with boiling hot water into a suitable vessel containing the sugar until the solution measures one gallon.

CREAM SYRUP.

Fresh cream	1 pint
Fresh milk	1 pint
Granulated sugar	3 pounds

Mix.

CHERRY CREAM.

Fresh juice of cherries	8 ounces
Fluid extract of wild cherry	1 ounce
Citric acid	1 dram

Simple syrup enough to make four pints.

Mix.

PEACH BLOW.

Lemon juice	8 ounces
Essence of raspberry	4 drams
Compound spirit of juniper	8 ounces
Sugar	1½ pounds

Water enough to make four pints. Solution of carmine, N. F., sufficient to color.

POWDER FOR THE CURE OF GAPES IN POULTRY.

Calc. chlorinat	℥ j
Camph	gr. v
Cretæ præcip	ʒ iv
Magnes. lev	ʒ iv

LIQUOR COPAIBÆ, CUBEBÆ ET BUCHU.

Pulv. cubebæ	℥ ii
Ol. copaibæ	ʒ iv
" pimentæ	ʒ iss
Tr. buchu	℥ j
Inf. buchu conc. (1 to 5)	℥ j
Freshly slaked lime	℥ ss
Alcohol	℥ ij
Aquæ	qs
Subcarbonate of soda	℥ ss

Rub up the cubebs and lime with 12 oz. of water, and boil for ten minutes. Dissolve the oils in the spirit, add the tincture and infusion, mix the two solutions, stand for twenty-four hours, shaking occasionally. Dissolve the soda in 2 oz. of water, and add to the liquor; stand another twenty-four hours and filter through a wet filter paper.

Dose: One or two teaspoonfuls three or four times a day.

CHEAP EFFERVESCENT LAXATIVE.

Sodæ bicarb	1 lb
Ac. tartaric	14 oz
Magnes. sulph. exsic	12 "
Sacch. alb	2 lbs
Ess limonis	ʒ ss

SYRUP OF PHOSPHATE OF IRON, QUININE AND STRYCHNINE (EASTON'S SYRUP).

[R. WRIGHT.—British Pharmaceutical Conference.]

Iron wire free from oxide	75 grains
Concentrated phosphoric acid, sp. gr. 1.5	11 fl. drachms
Strychnine in powder	5 grains
Quinine phosphate	120 grains
Simple syrup	13 fl. ozs.
Distilled water, a sufficient quantity.	

Place the iron wire, and the phosphoric acid previously diluted with an equal volume of distilled water, in a small flask, plug the neck with cotton-wool, and heat gently until the reaction is complete; then add the strychnine and the phosphate of quinine, and shake till dissolved; filter the solution into the cold syrup, wash the filter, and add as much more distilled water as may be required to make the volume of syrup up to one pint.

The above preparation will contain 1 grain phosphate of iron, ¾ grain phosphate of quinine, $\frac{1}{32}$ grain strychnine in each fluid drachm.

ANTI-ASTHMATIC FUMIGATING TEA.

[*Suddeutscher Apotheker-Zeitung.*]

Stramonium leaves, coarsely cut	100 grammes	[1540 grains]
Belladonna leaves, coarsely cut	25 grammes	[387 grains]
Hyoscyamus leaves, coarsely cut	25 grammes	[387 grains]
Potassium nitrate	50 grammes	[770 grains]
Potassium carbonate	0.25 grammes	[4 grains]
Alcohol	50 grammes	[14 drachms]
Water	300 grammes	[10 fl. ozs.]

Moisten the leaves with the alcohol, pack firmly in a vessel and keep tightly closed for 24 hours. Dissolve the potassium salts in the water, filter, add the filtrate to the leaves, allow to stand in a closed receptacle for another 24 hours, then dry the tea thoroughly.

CLYSTER FOR DYSENTERY.

[*Med. Chir-Rundschau.*]

Boracic acid	16 grammes	[246 grains]
Tannin	3 grammes	[45 grains]
Tincture of opium	15 drops	
Water	400 grammes	[13⅓ fl. ozs.]

Add to a quart of boiling water and use when the temperature has fallen to 36° C., the bowels of the patient having first been cleared by a dose of castor oil. This injection should be given once a day.

MENTHOL DENTAL CREAM.

[*Annali di Chimica e di Farmacologia.*]

Flowers of sulphur	25 grammes [387 grains]
Magnesia carbonate	25 grammes [387 grains]
Menthol	1 gramme [15 grains]
Cochineal	0.50 grammes [8 grains]
Glycerin	a sufficient quantity.

CREASOTE EMULSION.

[LÉGER, *L'Union Pharmaceutique.*]

Saccharated caseine	10 grammes [154 grains]
Creasote	10 grammes [154 grains]
Alcohol	10 grammes [3 drachms]
Water	a sufficient quantity.

Dissolve the saccharated casein in 10 grammes [160 minims] of water and the creasote in the alcohol, mix the two solutions and dilute with water to make 1,000 grammes [33⅓ fl. ozs.].

DIURETIC WINE.

[*Suddeutscher Apotheker Zeitung*]

Squill, cut up fine	10 grammes	[154 grains]
Fox-glove leaves, cut up fine	10 grammes	[154 grains]
Juniper berries, crushed	60 grammes	[15½ drachms]
Sherry wine	1000 grammes	[33⅓ fl. ozs.]

Digest with frequent agitation at 15 to 20° C. for eight days, express, filter and to the filtrate add any desired proportion of potassium acetate.

Collodium Belladonnæ.—At the Nottingham meeting of the British Pharmaceutical Conference two formulas were proposed to take the place of the one given in the formulary of the British Pharmaceutical Conference. These differ in manipulation only.

I. By R. WRIGHT.

Fluid extract of belladonna leaves	10 fluid ounces
Pure ether, sp. gr. 720	10 fluid ounces
Camphor	130 grains
Pyroxylin	183 grains
Canada balsam	365 grains
Castor oil	183 grains

Mix the fluid extract of belladonna with the ether, and add the other ingredients. Set aside for a few days, and then decant.

II. By W. A. NAYLOR.

Liquid extract of belladonna leaves	10 fluid ounces
Ether	10 fluid ounces
Camphor	130 grains
Pyroxylin	183 grains
Canada balsam	365 grains
Castor oil	183 grains

Mix the liquid extract and the ether, and set aside for twelve hours. Decant and dissolve therein the remaining ingredients in the order in which they occur in the formula.

New Inventions and Novelties.

A Benzin Soldering Iron.

The illustration shows a soldering iron made by G. Barthel which renders the user independent of gas or

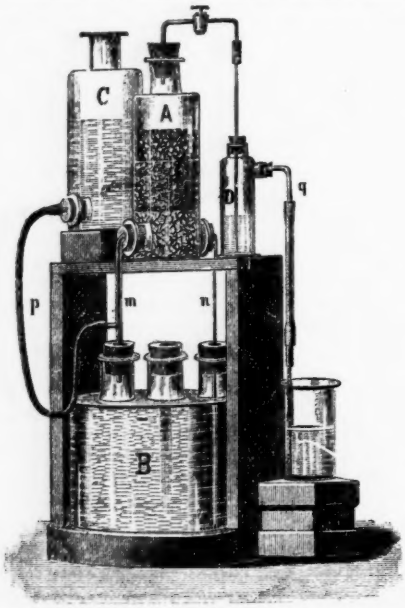
coal fire. The reservoir is in the handle. The soldering iron, or rather copper, may be replaced by a lamp. Benzin is the fuel used in it.

New Sulphureted Hydrogen Apparatus for the Analytical Laboratory.

The apparatus illustrated herewith was devised by L. L. de Koninck and described substantially as follows in the *Deutsche Chemiker Zeitung* (No. 61, p. 1099).

In the flask *A*, provided with two openings near the bottom, a layer of broken glass or porcelain is placed and on top of this the iron sulphide. The flask *A* being set on a wooden stand, as shown in the illustration, is connected with a three-necked Woulff flask *B* by means of *n*, a tube reaching nearly to the bottom of *B*, and by *m*, a tube opening just below the stopper of *B*. The tube *m* has a branch which is connected by means of the rubber tube *p* to the pressure flask *C*.

The flask *A* containing the iron sulphide is also connected, through a stop cock, with a wash-bottle *D* having an outlet through the rubber tube *q*. The glass tube at the end of *q* being drawn out to a fine point so



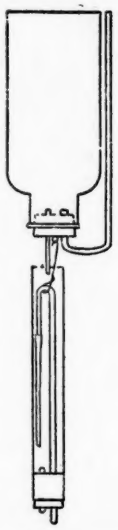
that the escaping gas will pass out in small bubbles, thus securing its fullest action. The stop cock may be attached directly to the bottle *A*.

To operate, place the diluted acid in *C* and open the stop cock. The acid will then pass through *p* and *m* into *A* where, coming into contact with iron sulphide, iron chloride is formed and hydrogen sulphide set free. The solution of iron chloride on account of high specific gravity will pass down through *n*, spreading over the bottom of *B* the supply of acid remaining as a supernatant layer. As fast as it is neutralized the acid will pass down into the lower part of *B* until it is all saturated. The iron chloride solution may then be removed from *B* by means of a siphon. When not in use the pressure flask *C* should be placed on the table beside *B*. The neck of *C* must be taller than that of *B*. The pressure is regulated by placing blocks of wood under *C*.

An Automatic Extractor for Washing Precipitates.

The apparatus figured herewith is the device of W. D. Horne and is described by him in the *Journal of the American Chemical Society* substantially as follows:

One part of the apparatus consists of a wide-mouthed bottle of 250 c.c. capacity closed by a cork perforated, by two glass tubes. One tube projects outward about three or four cm., and tapers to a moderately fine point. The other tube, after emerging from the cork, curves directly over the edge of the cork and extends down the full length of the bottle on the outside. The bottle, being filled with water, is inverted, and the water drops from the end of the short tube, while the necessary air enters by the long bent tube and bubbles up through the column of water in the bottle. As the rate of flow or dropping depends principally upon the fineness of the point of the dropping tobe and the freedom of the air's access through the longer tube, any desired rapidity of flow can be obtained by varying the size of either tube. It is more advantageous to use the same dropper and to regulate the air supply by plugging more or less loosely the upper end of the air tube with an appropriate stopper.



So much for the water supply. In order to convert this into an intermittent washing stream it flows into a tube suspended below, provided with a capillary siphon tube within, whose longer limb passes through a stopper at the bottom of the outer tube, something like the Adams fat extractor.

To make this part of the apparatus, cut the bottom off of a test tube fifteen mm. in diameter and fifteen cm. long, close one end with a rubber stopper with one hole, and within the test tube put a three mm. tube bent double by a sharp curve, with one limb about fifteen cm. long and the other about three cm. The longer limb passes through the hole in the stopper at the bottom of the test tube, while on the shorter limb is put a piece of rubber tubing of variable length, according to the quantity of water that is to be siphoned off at each delivery. To the loop of the siphon fasten one end of a short wire, whose other end terminates in a hook to catch in a wire eye inserted in the cork of the inverted bottle.

Thus suspend the siphon apparatus to the water supply, having the dropping tube inside the test tube. When the water is allowed to drop the test tube slowly fills, until the water, rising in the siphon's short arm, passes beyond the bend and siphons over. The operation then repeats itself.

The speed of dropping from the reservoir must be such as to allow each siphoned portion to pass completely through the filter before the next flows on. And the quantity which siphons over each time is to be regulated by varying the length of the rubber tube which extends from the short limb of the siphon. The lower end of this rubber tube is cut off diagonally to insure complete emptying of the siphon at each delivery.

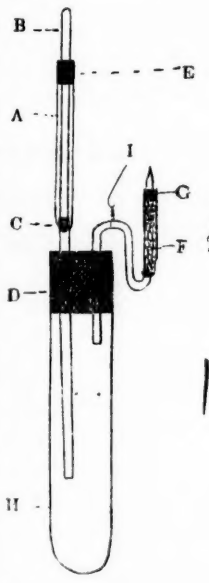
These things once arranged, they need little attention afterwards.

A Cheap and Useful Form of Apparatus for the Gravimetric Determination of CO_2.*

By J. H. Hoseason.

It must have occurred to all who have had occasion to employ any of the usual contrivances for the gravimetric estimation of CO_2 that the porportionate weight of instrument to substance is much too large for very accurate determination, especially when the quantity of CO_2 present is in small ratio. Most of these appliances are extremely fragile, and, moreover, expensive, disadvantages which do not apply to the one which I describe and figure.

To Make the Apparatus.—Draw off 2½ or 3 inches from the top of a ¾-inch or 1 inch diameter test tube, and while hot round the bottom by gently blowing into it, A. Fit with a perfectly sound cork, E, perforated by two holes of adequate size, through which the tubes B and C (to be subsequently described) should pass, air-tight. The tubes B and C are made by slightly drawing out at the center 4 inches of glass tubing (⅓inch diameter), then cutting exactly in two; join each of these to tubing having about one-third of its caliber; bend one of them S shape, as shown in B. A small plug of absorbent cotton is placed at the bottom of B, which is then nearly filled with granular calcium chloride, and finally closed by means of a perforated cork, E, through which passes a small piece of tubing drawn out to a capillary. B constitutes the drying tube. The tube C, when finished, is not unlike a syringe in appearance. It is fitted with a perforated cork, E, through which passes the piston D. This should work loosely in E. The piston D is made from some of the thin tubing by drawing to a point, then sealing both ends. On the pointed end is placed a piece of indiarubber tubing, F. By heating the rod before attaching the rubber, the latter will be cemented to the former. A perfect valve is thus formed when D is firmly pressed into C. A copper wire, W, is useful to hang the apparatus on the hook of the balance.



To Use the Apparatus.—Slide up the cork E‴, press D well home, and fill two thirds of C with 40 to 50 per cent. H_2SO_4; replace E‴; then proceed as with the other instruments.

In bringing my adaptation of the same old principle before you, I may state that its special advantages are: It is light, weighing from 5 to 6 grammes, whereas the instruments of Schrotter, Rohrbeck, Rose, and Geissler average from 20 to 30 grammes; it is inexpensive and simple, costing at a maximum *2d.*, a little time and manipulation; the aforementioned cost from *2s. 6d.* to *4s. 6d.* each. It is scarcely necessary for me to point out the advantages accruing to the student who endeavors to make his own apparatus, and I think the youth who does so gets a better grasp of the principles underlying his work—a point which I am afraid is sadly overlooked in the teaching of chemistry, and also other subjects.

*Presented at the meeting of the British Pharmaceutical Conference.

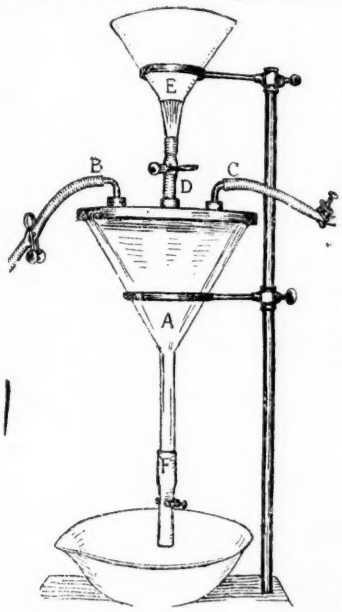
Personally, I have found this arrangement to be cleanly and accurate.

A Wash-Funnel for Oxidizable Precipitates.*

By J. A. Forret.

In the *Pharmaceutical Journal* of September 19, 1891, I described a wash bottle for washing readily-oxidizable precipitates, which piece of apparatus answers perfectly for precipitating oxidizable salts produced by double decomposition. I required, however, a more rapid and thorough elimination of the soluble salt than is obtainable by that means, and have found the funnel arrangement now described suitable for that purpose.

The funnel A is fitted with a perforated metal cone, and covered with a circular piece of wood carrying three glass tubes (B, C, and D), to which are attached indiarubber tubes furnished with spring clips. The wooden cover has also a glazed aperture as large as the diameter of the funnel will admit, to enable the operator to see the contents of the funnel. To the stem of A is fitted a piece of india rubber tubing (F), into the other end of which a short glass tube is inserted; underneath is placed a beaker or basin of convenient size containing water, under the surface of which the glass tube dips. Into the tube D the stem of a second funnel (E) is inserted; both funnels are convienently supported in the rings of a retort-stand.



The apparatus is used in the following manner: A piece of fine calico is placed inside the metal cone, and the wooden top cemented to the funnel A by means of almond meal made into a stiff lute with water to which a little glycerin has been added. The tube D is closed, and a current of coal gas, carbonic anhydride, or other suitable gas is passed through the funnel by the tubes B and C, to displace atmospheric air. The precipitate to be treated is poured into the funnel E, and by means of the clip at D rapidly transferred to the funnel A. When the bulk of the water has passed through the funnel, the tube F is closed by a clip, and the funnel A filled with boiled water through the funnel E. After the lapse of a few minutes the water is run off and the operation repeated till the precipitate is practically free from soluble salt. The tube C is now closed and the precipitate allowed to drain.

It is desirable to maintain a gentle current of gas while the washing is being carried through; and when the tube C is closed, the resulting pressure guards against the entrance of atmospheric air through any flaw in the connections.

Ferrous carbonate is the only salt I have had occasion to treat in this way, the wash-bottle referred to being used to precipitate the carbonate. With some slight modification of the funnel A, however, I believe the above arrangement could be conveniently used both for precipitating and washing such unstable salts as ferrous carbonate, ferrous phosphate, etc.

*Presented at the meeting of the British Pharmaceutical Conference

Written for the American Druggist and Pharmaceutical Record.

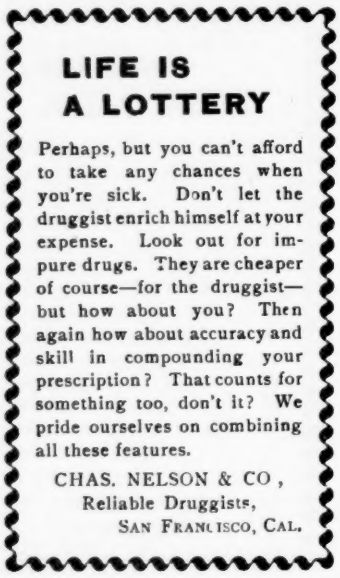
TIPS ON ADVERTISING. XI.

By Charles Nelson,
San Francisco, Cal.

In advertising a retail drug store, the proprietor should make use of the following methods:

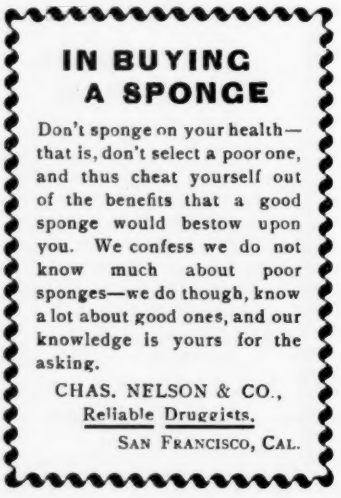
NEWSPAPER ADVERTISING.

Dwell particularly on the necessity of obtaining pure drugs, that life sometimes depends on it, on


LIFE IS
A LOTTERY
Perhaps, but you can't afford to take any chances when you're sick. Don't let the druggist enrich himself at your expense. Look out for impure drugs. They are cheaper of course—for the druggist—but how about you? Then again how about accuracy and skill in compounding your prescription? That counts for something too, don't it? We pride ourselves on combining all these features.
CHAS. NELSON & CO,
Reliable Druggists,
San Francisco, Cal.

your skill and accuracy in compounding prescriptions. I give an illustration of this style of announcement herewith.

Call attention to your stock of druggists' specialties, toilet requisites, soda fountain, etc., taking up


IN BUYING
A SPONGE
Don't sponge on your health—that is, don't select a poor one, and thus cheat yourself out of the benefits that a good sponge would bestow upon you. We confess we do not know much about poor sponges—we do though, know a lot about good ones, and our knowledge is yours for the asking.
CHAS. NELSON & CO.,
Reliable Druggists.
San Francisco, Cal.

some specific article and giving a little history or description of same; take, for instance, a sponge.

Wrap up with every package a dainty printed slip dwelling on some feature of your business; for instance, bringing to notice some new brand of perfume or sachet, giving a complete list of all mineral waters to be obtained at your store, calling attention to my soda fountain, etc. For variety's sake I would alternate this by giving little household hints; in Winter, for example, some simple method of preventing and curing chapped hands, etc.

It is a good idea to use a certain color of wrapping paper exclusively, also to have the labels and cartons of all goods put up by you of the same color. People would gradually associate this color with your store and it would furnish you with a standing advertisement; the store front should be painted of the same color.

It is best to make prominent the fact that you keep for the convenience of the public a full line of postage stamps, stamped envelopes and postal cards, also a telephone and directory.

I should endeavor to originate some distinctive trademark and identify it with all my labels, announcements, etc. That of the Owl Drug Co., San Francisco, will serve as a good example.

I should make prominent the fact that I was ready for call, night as well as day.

I should, if in a fair location, invite people to step in and wait for the car, etc., irrespective of their purchasing anything or not.

One should endeavor to observe originality in window dressing, aiming to have the window different

EXTREMES MEET
SOMETIMES.
They always do at Chas. Nelson & Co.'s drug store. Hot drinks in cold weather—co'd drinks in hot weather. Just now the thermometer is down, and you will find our Hot Lemonade, Hot Soda, Hot Clam Juice, very grateful; or, if you want the latest, step in and try our
ANTI-FREEZE
NECTAR.

from anybody else's. A mortar used in olden times, a sponge in its crude state, etc., would occasionally prove useful and attractive for this purpose.

Make special features for your soda fountain, observe timeliness of season with regard to hot and cold drinks, also issue tickets, whereby those buying a dollar's worth would obtain them at a reduction; thus, by oftener frequenting your store you could become better acquainted with the customers, and your chances of selling them something else thus increased.

Offer free medicine to the needy poor between certain hours, if their applications be indorsed by some reputable physician or other person.

Endeavor to note the arrival of new physicians and send them at once a pad of recipe-blanks with their name on as well as your own; also, if circumstances permit, make a personal call.

If I depended entirely on my sale of patent remedies (viz., having no physician's prescription trade at all) I should have a doctor in attendance, at certain hours, to give free advice to those who wished it.

There are of course, other methods that can be suc-

cessfully employed, depending somewhat on location and local circumstances, but I believe a faithful adherence to the above suggestions will boom in a legitimate way the business of any drug store.

A SYSTEM OF ADVERTISING.

By Samuel J. Platt,
Oakland, California.

My system for advertising a retail drug business is as follows:

1. Keep the best drugs and goods my skill, judgment and money can buy.

2. Keep everything clean and attractive. Have fine fixtures.

3. Exact of employees and myself practice the utmost courtesy toward all coming in my store.

4. If in a large city study especially the territory tributary to my store, specially adapting my business to wants of probable customers.

5. 365 days in the year take special pains to please the ladies.

6. Have something to interest customers waiting for prescriptions, etc.

7. At least twice a year have days in the nature of opening days. Attention called to the same by newspaper and circular advertising.

8. At least four times a year have a general distribution of circular matter, thoroughly covering my territory, matter neatly put up in envelopes and as far as possible addressed to the heads of families.

9. In spite of the evils of cutting, make a judicious selection or use of newspaper, circular and sign advertising afforded by patent medicine and other people who advertise to the consumer.

10. Study my city and adjacent territory and myself manufacture one or more preparations specially adapted to the wants of the people, advertising the same by samples, circulars, signs and newspaper advertising. I would try to have an article or articles better than people could get any one else. It or they would make my name known.

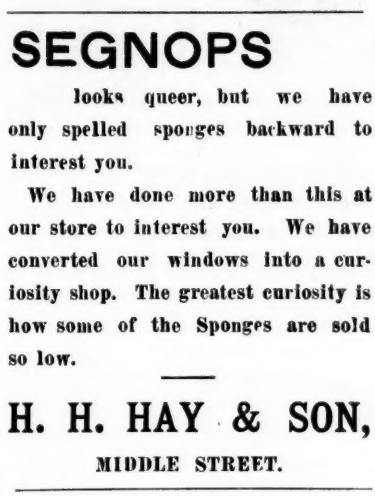
11. In large cities bill boards generally cost more than they are worth. In smaller places make a judicious use of prominent and permanent locations.

12. Make friends of newspaper-men, giving tips for news items whenever not interferring with the confidential relations of druggist to customer.

13. Pay special attention to window displays. Try each week to have something worthy of newspaper notice, paying for all notices reciprocity of the newspaper men did not secure. From time to time allow people to exhibit articles in window, thus securing many notices. *My point.* Effect of window display emphasized by newspaper notice.

14. Use newspapers constantly.

Keep display add running all the time, varying size just as newspapers vary in size—progressive, modern papers.

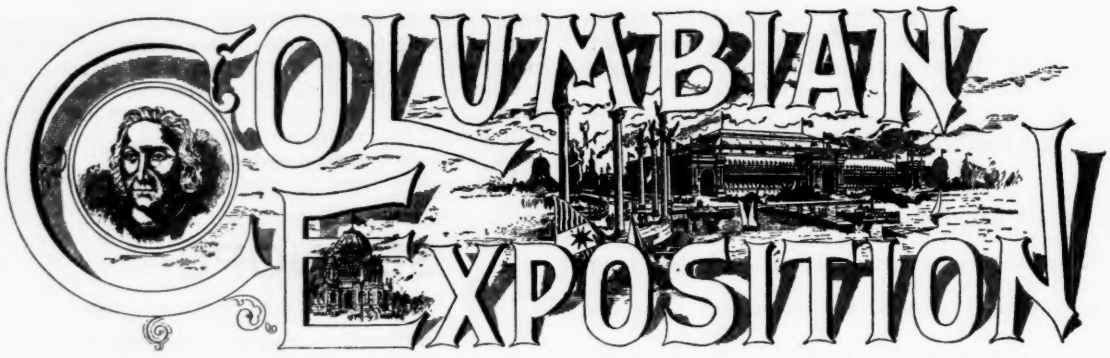

SEGNOPS
looks queer, but we have only spelled sponges backward to interest you.
We have done more than this at our store to interest you. We have converted our windows into a curiosity shop. The greatest curiosity is how some of the Sponges are sold so low.
H. H. HAY & SON,
MIDDLE STREET.

Use local notices judiciously and plenteously, striving to have them take the form of news items. All advertising to form one complete whole. A certain per cent. of receipts to be set aside for advertising.

The main and constant purpose is to get people to come to my store.

In all advertising impress upon the minds of the people

1. My skill.
2. Purity and extra quality of goods.
3. Reasonableness of my price.
4. Proper treatment of customers.
5. People can do better at my store than anywhere else.



Mines and Mining Building.

(*Continued from page* 163.)

Canada also makes an excellent display in this building. Kaolin occurs of various colors, blue, white, and brown, and in the lump and powder forms; also graphite which is to be seen in large lumps or masses on the floor, and in smaller pieces in cases which also contain the powdered article in jars, and also lead pencils. Iron and antimony ores and masses of steatite and soapstone also abound here. Among the curiosities in the pavilion is an ingot of nickel weighing 4,500 pounds. A Montreal firm is represented by a barrel each of potash and pearlash. No less interesting than the other portions of the exhibit is the display of crude petroleum and its various derivatives, ranging from lubricating oils down to paraffin and paraffin candles.

New South Wales is also well represented by mineral products. Masses of alumite are shown, and also the alum which is manufactured from it. This ore contains from 60 to 80 per cent. of alum which is extracted from it by roasting, lixiviation, and crystallization. Other minerals displayed are chrome-iron ore from which chromium is extracted, manganese ores, crude asbestos, a number of ores yielding silver, such as argentiferous galena, argentiferous shale, argentiferous quartz, auriferous mispickel, etc.

The exhibit of Austria consists largely of mineral waters and salts. This country is represented by Bilin water from Bilin, Bohemia; Franz Josef water from Buda-Pesth; Levico water, containing arsenic and iron; Hunyadi Miklos water, and others. Carlsbad Sprudel water and the salt are also on exhibition.

The exhibit of France contains nickel ore from New Caledonia, which is in green chunks marked with brown cobalt ores; also metallic cobalt and nickel, the latter in rolls, grains, small cubes, etc., also various salts of nickel and cobalt as the oxalate sulphate, chloride, nitrate, acetate, oxide etc.

The only portion of the exhibit of England which merits attention are the displays of Fullers earth in lumps and powder and in small sacks and fancy pasteboard boxes.

Mexico is well represented by mineral products, but unfortunately all the labels are in Spanish. However the following are easily recognized: crude asbestos, marble, onyx, opals, silver and copper ores and crude copper sulphate.

The balance of the main floor is devoted to the individual exhibits of the States of the Union, and it is hardly necessary to describe each pavilion in detail. Coal is a mineral product which occurs in the majority of the pavilions; onyx, a product of many Western States, is represented in several pavilions; iron ores occur in abundance; silver ores abound in the exhibits of the western ores; gold nuggets and ores are also among the curiosities displayed by

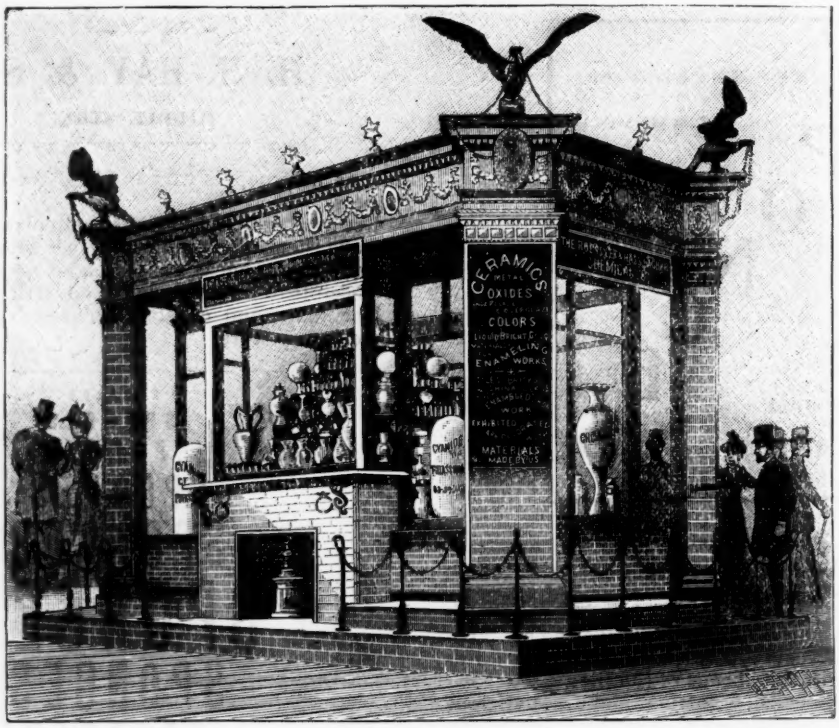


EXHIBIT OF THE ROESSLER & HASSLACHER CHEMICAL CO.

the Western States; zinc ores are shown by Wisconsin and Missouri; copper and copper ores by Michigan; phosphate rocks by the Southeastern States, and so on the list might be multiplied.

The gallery should be visited by every one entering the building, as it contains a great number of interesting things.

The Roessler & Hasslacher Chemical Co. displays a case containing potassium cyanide in original tin cans of 112 pounds each, also in tall inverted glass jars, in small cans and in wide mouth bottles, and also red and yellow prussiate of potash and potassium permanganate. This enterprising firm also has an exhibit of ceramic colors on the main floor of the building.

Batelle & Renwick, of New Jersey, show crude potassium and sodium nitrates, the former, also in the refined state, in remarkably large crystals about one foot long, sulphur in masses and powder, etc.

The Welsbach Light Co. has a very interesting exhibit prepared by Waldron Shapleigh which consists of a case containing a large array of salts of the rare metals. Among the metals represented are neodymium, praseodymium, erbium, yttrium, thorium, lanthanum, cerium, and others. The most noticeable feature of these compounds is the peculiar and marked colors.

A number of mineral waters are shown on this floor; for instance, the Manitou and Saratoga Lithia. An interesting display in this connection is that of all the mineral waters in the United States. The exhibit is arranged on shelves to form steps, and does not consist exactly of water, but simply of the peculiar styles of bottles used as containers, each adorned with the characteristic label used by the mineral water firms. The number of bottles displayed is 151.

The exhibit of Ward's Science Establishment, of Rochester, N. Y., occupies more space than any other exhibit in the gallery, for it occurs on both sides of the gallery. Among the interesting things displayed are models of crystals. The remainder of the exhibit consists of ores arranged according to composition, oxides, carbonates, silicates, etc. The entire exhibit is exceedingly large and would reflect great credit on any institution.

In the German section is an exhibit of paraffins and mineral oils, also such compounds as meta-ortho and para-cresol, red oil, carbolic acid, benzol, lutidine, picoline, etc. The German Kali Works have a small exhibit in this section similar to the one in the Agricultural Building.

The largest and most handsome and imposing exhibit is that of the Standard Oil Co. This consists of pure white show cases of deep style with tall glass jars containing various kinds of petroleum and all its products. The cases containing benzine, gasoline, etc., are specially attractive owing to the refractive power of these liquids. The exhibit is faced on all sides by white pillars.

(*To be continued.*)

CORRESPONDENCE.

Dispensing by Physicians.

To the Editor of the AMERICAN DRUGGIST.

Sir: I have been reading your interesting journal for the past year with great satisfaction. But there is one point I wish you would touch upon, and that is: What is to be done by the pharmacists of the country to head off the practice of physicians dispensing their own medicines? This to my mind is as great an evil as the cutting in patents, yet it is a subject rarely or never touched by pharmaceutical writers. It is a crying evil and needs correction as much as any that threatens the stability of retail pharmacists. Competition if legitimate is all right, but I venture the assertion that not one druggist in a thousand can stand it if both sources of revenue—patents and prescriptions—are cut off. I notice that a great many pharmacists are writing of the advisability of introducing a ten cent counter (that is certainly humiliating and does not speak well of our boasted progress in the art), whilst others are worrying over the prices to be charged for prescriptions. The latter seems mockery to the thousands of druggists situated as myself. There is only one choice left that I can see, and that is to go into a general store business. Circumstances are surely making the retail drug business a thing of the past, and

JEAN MARTIN CHARCOT.

the future druggist to be successful financially must come down to the plane of ordinary business or get out of the profession. Can you offer a solution to this vexing question? C. E. B.

On a Uniform Prescription Price.

To the Editor of the AMERICAN DRUGGIST:

SIR: The article of Geo. Cutts on uniformity of prices for prescriptions covers the ground fairly well, and leaves but little more to be said.

It is my opinion, however, that any attempt to establish a uniform scale for the entire country would fail for many reasons. Among these may be named: Expense of conducting store, locality, an article which may be frequently used in one section and seldom in another; quality of goods dispensed. These are all factors which must be considered. Then again, the affixed price may be an extortion (and such things do happen), would it be fair to your customer to perpetuate the extortion? Would any sense of fealty to the "other fellow" justify this? Then, again, one pharmacist may be scrupulously exact in his preparations, dispensing nothing but the highest standards of quality, while his nearest neighbors and competitors are dispensing P. D. Q. fluid extracts, tinctures, cheap fluid extracts and drugs generally. Would not this conscientious pharmacist suffer by this uniform scheme?

So far as we are concerned in this locality, and this will hold good in all Indiana cities where local organizations exist, as well as among the members of the State association, we have for the past ten years used a uniform price mark for all pocket prescriptions. This was started in Evansville in 1882, and we have found it to work very smoothly. It would probably work well to adopt such a scheme in different sections of the country. This, however, is hardly to be expected, for it would first be necessary to organize, and that seems impossible. The American pharmacist, well—he is great on theories and ideas and makes many resolutions, but never has the grit to carry them out. There are many evils which bear down on him, but lacking the gift of close organization he bears them with a meekness that no other profession would. He might profitably learn a lesson or two from the bricklayer.

LEO ELIEL.

SOUTH BEND, INDIANA.

OBITUARY.

JEAN MARTIN CHARCOT.

Jean Martin Charcot, the great French *savant* who passed away at Morvan, France, about the middle of August, was born in Paris in 1825 and was thus 68 years of age at the time of his death.

The name of Professor Charcot is known throughout the civilized world in connection with the modern discoveries in the pathology of the mind and nervous system. Speaking of him in the French paper *L'Illustration*, a recent writer dwells particularly upon this, remarking that he made a most profound study of and practically created that new classification in pathology popularly known as locomotor ataxia aphasia, illusion, and nervous disorders of a high grade.

In concluding with a reference to the famous school of Salpetriere, allusion is made to the permanent distinction which "this celebrated *savant* with Cæsarian profile, bright eye, strong lip and genial expression," has by the formation of the school added to the scientific reputation of the French nation. The great teacher was very popularly known through his researches in the domain of hypnotism and allied neurological studies.

PHILEMON E. HOMMEL.

Dr. Philemon E. Hommel, a prominent member of the New Jersey Pharmaceutical Association, died at his home in Jersey City on Thursday, September 14, at the age of 57. Dr. Hommel was a native of Alsace. His grandfather and father were pharmacists, and he followed them and studied at the *Ecole de pharmacie*, Paris, and was for several years apothecary at the famous hospital, Hotel Dieu. He had contributed several papers to the proceedings of the New Jersey Association during his connection therewith and one on "Oleum Æthereum" appeared in the PHARMACEUTICAL RECORD of November 3, 1892. He is survived by three sons and three daughters.

With the Advertisers.

Norwood's Hydrobromate Caffeine.

The Smith-Kline & French Co., wholesale druggists, Philadelphia, have just put on the market Norwood's Granular Effervescing Hydrobromate of Caffeine. 10 cent size, for which the point is made that it is a package larger in size, better in quality, and handsomer in appearance, than any other 10 cent pacdage of this, or a similar preparation put on the market up to the present time.

The granules in this preparation of theirs are a good size, and are not the siftings which are found in most other 10 cent preparations of a similar character. Their package measures 3½ inches in height, 1½ inches in diameter, and 5 inches in circumference. Each bottle is handsomely wrapped in a colored wrapper, said wrapper being printed in black ink with a red border, which makes a very showy and attractive package.

The Smith-Kline & French Co. will be pleased to quote prices on the above preparation, upon application, put up under the name of Norwood's.

Put up with the purchaser's name, business and address at the bottom of the label and with his name at the top of wrapper and his name, business and address at bottom of wrapper in full gross lots; also in one-half gross lots. They do not put up less than one-half gross under the purchaser's name.

They inform us that they will mail (postage prepaid) one-twelfth doz. bottles of Norwood's Hydrobromate Caffeine, 10 cent size, to any reader of the AMERICAN DRUGGIST who will send them his business card, label, or letter-head, inclosing 10 cents in stamps.

Chocolate Bon-Bons.

The Walter M. Lowney Co., of Boston and Chicago, make a specialty of chocolate confections for the drug trade. Druggists who carry a select line of confections would do well to stock the preparations of the Walter M. Lowney Co., for which the makers claim special superiority. A card to the firm at their Boston office, 97 to 107 Pearl street, or to the Chicago office, 279 E. Madison street, will bring a catalogue and price list containing full particulars of these and other goods. Mention the DRUGGIST AND RECORD.

Creasotal in Tuberculosis.

Creasote carbonate is destined to supplant creasote in the treatment of tuberculosis in a very near future.

The extremely favorable and quick action of creasote carbonate in the treatment of tuberculosis, has recently been demonstrated by Dr. Edmond Chaumier, of Tours, France, in a paper read before the Academy of Medicine at Paris (*Deutsche Medicinische Wochenschrift*, 1893. No. 24, 25). He stated that with the creasote carbonate treatment a girl, fifteen years of age, gained eight pounds in weight within two months, and a young woman of twenty years, under the same treatment, gained thirteen pounds in two months' time.

Creasote carbonate is administered either pure or in capsules, or mixed with four to twelve parts cod liver oil, or as an emulsion of one-half to two teaspoonfuls beaten up with the yolk of an egg, diluted with water, sweetened and some aromatic added, and administered in several doses.

Write Schering & Glatz, New York City, mentioning this paper, for further testimonials of its therapeutic value.

A New Shampoo Bib.

One of the new articles made by the Tyer Rubber Co. is the "Barbers' Shampoo Bib." These convenient little articles are made out of pure sheet rubber and have a hole in the center which can be stretched large enough to slip easily over a person's head and then contracts around the neck. By means of this barbers can

give their customers either a hair cut or shampoo without soiling their shirt or collar. They are inexpensive and articles which druggists can handle conveniently with other goods of rubber. The accompanying cut illustrates its general appearance; prices can be obtained by addressing the makers, the Tyer Rubber Co., Andover, Mass.

An Antikamnia Campaign.

The Antikamnia Chemical Company are again giving evidence of the vitally progressive character of their business activity. They have just brought themselves into still closer touch with the profession by bringing to its notice in a salient and forceful manner, their entire list of preparations. To specify succinctly, we quote from their circular letter: "In response to general approval, and to meet the additional requirements ot the practitioner, besides antikamnia in original powder form, our list now includes: one grain, two grain, three grain, five grain and ten grain antikamnia tablets. Also, combination tablets of antikamnia and quinine containing 2½ grains each of antikamnia and quinine sulphate; and combination tablets of antikamnia and salol containing, in like manner, 2½ grains each of antikamnia and salol."

It is perhaps hardly a necessary caution on our part, since dealers have long since learned to feel by instinctive impulses in the demand, whenever the company is stimulating its trade, and consequently will hardly need the advice we now give.

Nevertheless we frankly say to all retailers, you may certainly expect from their present work a great impetus, and you will do well to set your houses in order, by stocking up at once.

Scientific Advertising.

Dr. A. E. Dickinson, manager of the Cudahy Pharmaceutical Company, has contributed a paper bearing this title to the *Western Advertiser*. The paper is reprinted in a recent issue of *Printer's Ink*, which is a compliment not always accorded to writers from the pharmaceutical standpoint, though the "Little School-master" very frequently borrows a good thing from the AMERICAN DRUGGIST.

Referring to his method of introducing the products of the Cudahy Pharmaceutical Co., Dr. Dickinson goes on to say:

"Our line being new, I endeavor to make our name, products and capacity better known than to give the therapeutic indications of all or any of our articles. We are thus brought prominently before the class we aim to reach, through the medium of medical and pharmaceutical publications."

Stress is laid upon the fact that results are looked for in advertising even by houses of the size of the Cudahy Pharmaceutical Company. The careful insertion of each advertisement provided for, its every appearance checked and all little details thought of, as if the very existence of a great plant with almost unlimited capital, buildings covering 23½ acres of ground, with a pay roll of 2,500 men, 25 great managing departments, branches and correspondents in almost every center, and an annual output of $25,000,000, was dependent on the advertising of the Rex Brand Beef Extract, of which they have a capacity to make 200,000 lbs. per annum, and also some 30,000 lbs. of pepsin and its compounds, which can now be found in some 50,000 drug stores in the United States.

Hot Soda.

A few weeks more and "hot soda" will again be the popular beverage. In view of this it will be well for druggists to examine into the condition of their fountains and make the necessary preparations for dispensing the seasonable drinks. In this connection the catalogue of the Low Art Tile Co., is timely and opportune. In their circulars the point is made that the Low Art Tile Co. are independent; they do not belong to the Trust and can therefore make their own prices and terms. The following claims of superiority over all other fountains are made: The Low Art Tile Fountains are acid proof; they never change color; they consume less ice; draw the coldest soda; do not sweat, and lastly are easy to keep clean.

The Low Art Tile Co. issue a handsomely illustrated catalogue which any druggist can obtain by addressing the firm at 51 Portland street, Boston, and mentioning this paper.